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FLYING

Reg. U. S. Pat. Off.

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THE COVER: The Cessna 310 as photographed by Hans Groenhoff. See "Business Asked for It" on page 24.

CONTENTS

Look Up, Young Man! Look Up! *An Editorial.* 12
Jungle Oil . . . . . *James Joseph* 14
Shadows of the Korean Air War at Geneva. . *William Courtenay* 16
Offices Aloft . . . . . *L. C. Philmus* 18
Cruise to Chilko 20
Capital's Big Step . . . . . *Jan H. Bogardus* 22
Instrument Flight . . . . . *John R. Hoyt* 23
Business Asked for It . . . . . *Dwane L. Wallace* 24
The Big Edge . . . . . *Mel Skol* 26
Willamette Sky Pals . . . . . *James Stanley Hall* 28
Canted Deck . . . . . *Cmdr. W. G. Winslow, USN* 29
Of Men and Ships . . . . . *J. V. Wilson* 30
Michigan Ercoupers 32
Club Safety Award . . . . . *Christie Campbell* 34
Ad Astra Per Ardua . . . . . *A. L. Cleave* 35
The Deep Roots of Embry-Riddle . . . . . *M. Peavy* 36
Stits Kits . . . . . *C. L. Hamilton* 38
Crosswind Gear . . . . . *Ernie Werner* 39
The Gremlin Corner . . . . . *Weyman S. Carver* 42
I Learned about Flying from That! No. 175. . . . *G. A. Watson* 43

FLYING FEATURES

Mail Box 6
Have You Seen? 40
Briefings 44
Flying Farmers . . . *Bill Renshaw* 46
Flying Calendar 48
AOPA News 56

Photo Credits 73
Index of Advertisers 73

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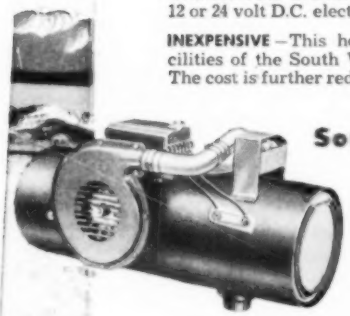

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MAIL BOX

EXTERNAL CHECKS

Recently I have noticed that several "I Learned About Flying From That" articles have been concerned with external checks.

I took my pilot training in the Royal Canadian Air Force last year. One of the first things we were taught on the flight line was to make a thorough (and I mean thorough) external check of the aircraft before going up.

I have done some private flying since then and have seen both students and instructors climb into their planes without even thinking of an external check.

If instructors want their students to be safe pilots as well as good ones after graduating, they should try to set a good example themselves. Things such as this, when stressed at the beginning of the training, are not easily forgotten.

JACK BARR

Toronto, Ont.

NIGHT FLYING

Although I agree whole-heartedly with what Mr. Stonecipher was trying to say in his article about single-engine night flying in the July issue, I believe that the article was ill conceived or poorly edited. Although the modern lightplane and its engine are reliable from an engineering standpoint, it must be meticulously maintained if it is to retain that degree of reliability necessary for safe night flying.

I'm afraid that the average pilot, after reading the main part of the article, will not recall the contents of the final paragraphs that half-heartedly tell him to seek expert advice and instruction before proceeding. The article states that night flying navigation is only different, not harder, than daytime navigation but forgets to mention the time required to become proficient is considerable.

Also Mr. Stonecipher should fly out west some night. He'll find many areas where there are no towns of 30,000 population and those that do exist are so small as to be difficult to identify.

FLYING is doing a disservice to its readers if it doesn't follow this article up with several stressing the use of radio aids and the turn and bank indicator during night flight. The latter to be used when everything disappears because you are suddenly in a cloud you couldn't see and need to do a quick 180.

Night flying can be done with a reasonable degree of safety but let FLYING educate its readers in the "how" of it instead of creating the impression that it's as simple as ABC. You might lose some readers that way and AOPA's insurance company would have to pay the insurance to their survivors.

On the whole I enjoy the magazine tremendously and read it cover to cover.

B. V. DELTOUR

Northridge, Calif.

I consider FLYING one of the finest publications available for a broad coverage of air activity. One feature that I never miss is The Pro's Nest. I'm always looking to benefit by following a good pilot's advice.

However, I refer you to the July issue and the article carried in The Pro's Nest. I think it is the poorest piece of philosophy to ever reach the eyes of a group of low experience pilots that has ever been published.

I fly a 170D Cessna for a corporation and occasionally I fly at night. I have had the experience of making an emergency landing in the blackest of nights. I can't say that I'm proud to have had the opportunity and I might add that it was probably the best landing I'll ever make—no injury to my passengers, myself or the plane, thanks mainly to the 170 and the large flaps.

Flying at night in a single engine airplane without a fairly important reason is foolishness. I and others like me will fly again at night and sometimes without a really good reason. However, I still have a lot of respect for human and mechanical failure, so I'll be just a little bit worried. The engine could quit, I could get lost, and I could run into bad weather which is hard to see at night.

If a pilot wants to fly at night, that's all well and good but at least let's be honest about it and tell the other fellow pilots the truth about this night flying. There is a good possibility that some pilots with limited experience will try some night flying after reading that article and when they do, they are going to find out that it's not all peaches and cream. If they become a little too nervous and worried, you will read about it in the paper. I don't wish to be a kill-joy, but after all, let's not make statistics out of some good daytime pilots. It doesn't take guts, and a pilot is not yellow if he chooses to fly only in daylight hours with a single engine plane—he's just using good common sense.

The statistics quoted in the article are a bunch of baloney: so the average is only one mishap in thousands of hours or trips—is that supposed to encourage me? That *one* could be a Lulu.

Flying at night is beautiful and chances are you'll always be safe, but use common sense, instruments and plenty of altitude.

THOMAS E. HECHT

Effingham, Ill.

SINGLE ENGINE IFR

Let the single engine IFR argument rage, but I intend to get my two cents worth in. There are two schools: 1) the aircraft is the limiting factor; including its equipment; and 2) the pilot is the limiting factor.

With single engine aircraft, pilot ability/experience should not be the prime limiting factor to be considered simply because any, and I repeat any, weather condition safe enough to fly a single engine aircraft through would in no way tax the ability of even a newly licensed instrument pilot.

In low stratus clouds in comparatively smooth air, single engine operation should not be attempted when ceilings are below 1,000 feet. Even at this altitude, loss of the engine would mean little time available to pick a field for a safe landing.

Let's not lose sight of the fact that single engine pilots always fly as though the one fan will poop out and never put themselves in a position from which a safe landing can not be made.

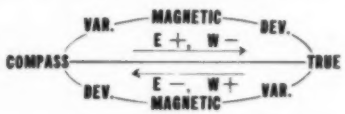
Ridges should be crossed IFR only if the tops were not obscured to the extent that a safe landing could be made. And speaking of frontal areas and storms for single engine IFR . . . stay out!

LOUIS A. BOVE
Flight Instructor
Wake Island Pilots Assoc.

Wake Island

THE COMPASS

With reference to the "Pro's Nest" article on the compass; I use the following



easy to remember diagram for applying compass directions in an aviation class at Jacksonville State Teachers College.

C. V. CATER

Jacksonville, Ala.

THAT OL' DEBIL WIND

Dick Morrison is to be congratulated for his excellent article on wind which must have caused considerable head-scratching among pilots over the country, including this green student. I wonder if there was ever a pilot who didn't assume that he could calculate his cruising speed by flying a round trip up and down wind and taking an average.

However, I believe that Dick has misinterpreted his startling results in attributing the lowered average speed to an unrecognized "frictional effect". The planes flying north and south, if allowed to fly the same length of time, would still average 100 mph. The mathematical

(Continued on page 10)

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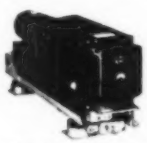

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For horizontally opposed and Ranger in-line engines. Minimizes ring and valve sticking, oil consumption, oil-screen clogging and plug fouling. Users of this great detergent oil have actually increased periods between engine overhauls by as much as 100%.

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It's "refinery-clean," because Gulf Aviation Gasoline dispensing equipment is equipped with advanced Micronic Filters.

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Narco now offers a great new Omni navigation package—the compact Omniplexer which joins the famous 8-channel Narco Omnigator and the most popular 4-channel Narco Superhomer to make your navigation easier and simpler.

Measuring only 6¼" wide by 3" high by 6⅝" deep, the Omniplexer embodies all the traditional Narco features of accuracy, reliability and easy readability on both inbound and outbound headings.

Used in conjunction with the Narco Simplexer, the Omniplexer gives you Omni navigation and 12-channel VHF communications with famous Narco "whistle-stop" tuning that puts you right on the desired frequency for simplex transmission without even looking at the tuning dial!

You can install the Omniplexer in your airplane with confidence because Narco has built more Omni systems for business and private planes than all other makes combined! See the Narco Omniplexer and other fine Narco equipment at your nearest Narco distributor or write for new brochure on the Omniplexer today.

Good news for SIMPLEXER owners

If you already have a Narco Simplexer, you can add the Omni navigation function merely by plugging the Omniplexer into your Simplexer which already incorporates a reception plug for this purpose. You'll find this combination ideal for basic navigation or as an excellent auxiliary piece of equipment.

Omniplexer is priced at only **$195.00**

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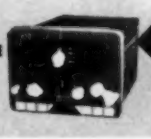

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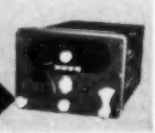
SUPERHOMER—Compact, single-unit Omni; VHF receiver; 4-channel transmitter. 10½ pounds complete.



MAIL BOX

(Continued from page 6)

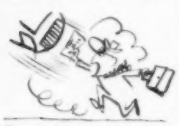
secret to this brain-twister is that the slower plane flies for a longer time and the faster plane flies for a shorter time, which lowers the average speed when distance is a constant as in Dick's calculations and the usual flight problem.

ROBERT W. CARSON, M.D.

Paducah, Ken.

TAXES, TAXES, TAXES

Here, perhaps, is a new twist to owning an airplane. It so happens that my home is in Marietta, Ohio, and our nearest airport is Wood County Airport, W. Va. Some of us who own light planes and live on the Ohio side of the Ohio River keep our planes at the Wood County Airport and are grateful that we have such a fine airport so close to us.



Owning a plane in Ohio entails the payment of a yearly registration fee (like registration plates for a car) but many benefits are afforded the plane owner from this money. I don't mind paying it.

Now! Along comes the tax department of Wood County, W. Va. and sends us forms to fill out so we can be taxed for personal property—our airplanes—stored at the Wood County Airport.

How can Wood County, W. Va. tax the personal property of an Ohio resident in the case of an airplane? But apparently they can. Maybe they will even be able to tax our automobiles if we park them in Wood County for any length of time.

As yet I have not paid the tax nor filed the return, but it looks like I will be forced to do both. And that will be the end of a personal plane for me.

E. ZUCCHELLI

Marietta, O.

NEW OPERATOR ON THE WAY

I want to thank FLYING and two great men—Joe Schwanda, fixed base operator, and Frank Harvey, author—for the wonderful article, "Man With a Hammer."

I have been planning for some time to be a fixed base operator. But that article changed the word "planning" to "going".

Am now in the Air Force but due for discharge before long and have been planning my own small field. Discussing the subject with friends and field operators, nine out of ten called me foolish, a sucker, and told me to look at all the fields that closed up in '47, '48, and '49. I'd always come back at them with some of my ideas, but they'd still laugh.

Now Joe Schwanda has proved that a small fixed base operation can be successful.

EUGENE D. SPENCER

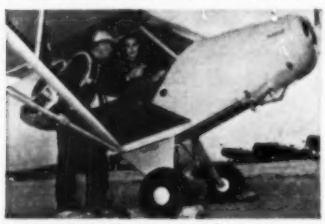
Amarillo, Tex.

DUSTER AND SPRAYER. PA-18-A, agricultural version of the Super Cub, is world's most widely used plane for applying dust or spray.

SKIPLANE. Super Cub is ideal for snow flying, holds world record for high altitude take-offs. It's "the plane that doesn't need an airport."

SURVEY. Super Cub is widely used in survey and line patrol since it can fly as slow as 40 mph, gives pilot and photographer good visibility.

LIAISON. Piper L-18 and L-21 observation-reconnaissance planes, with superb short-field ability, are used by U.S. Army and NATO nations.



USAF TRAINING. Cadets get first training in PA-18-T Super Cub. More people have learned to fly in Pipers than any other plane.

"It takes a Super Cub to take it!"

Built for the really tough flying jobs, the Piper Super Cub is in use around the world on an astonishing variety of missions – expeditions high on mountain slopes, carrying missionaries deep into African jungles, patrolling pipe lines, training USAF cadets, dusting, spraying, hauling incredible loads in and out of short, rough strips.

While the Super Cub is famed for its performance it is noted also for its rugged, trouble-free design. Its stamina is best summed up by Ed Molitor, veteran San Diego pilot, in telling of the Super Cubs' use with the long-range tuna boats. Operating in the open Pacific these Super Cubs on floats save enough time scouting for bait to permit the tuna clippers to make an extra trip every year.

"The boats remain at sea from two to four months and the planes must be ready to fly at all times," says Mr. Molitor. "When you land a seaplane in the open sea under adverse conditions, it takes a Super Cub to take it."

If you have a tough flying job to do or if you want an airplane whose sheer performance will give you a new conception of aircraft utility for farm, ranch or private flying, see, fly and buy the Super Cub – unmatched anywhere in the world.

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FLYING
VOLUME 55, NO. 3
SEPTEMBER, 1954

AN EDITORIAL

Look Up, Young Man! Look Up!

"GO WEST, young man! Go West!"

Just one hundred years ago this young nation, in grave danger from within and without, won unity and peace by meeting a challenge to conquer a new frontier.

"Go West, young man! Go West!"

The American scene then, as today, was one of jeopardy. Slavery had bred an internal schism. Russia and Britain threatened American sovereignty on the Pacific slope. Reliance upon allies was a broken reed.

Where was the way out? What broad course of action could lead to a better destiny?

Suddenly there thundered a voice from among the people in a challenge that had logic and gave hope.

"Go West, young man! Go West!"

Horace Greeley, evangel of American destiny, saw that in the conquest of western frontiers the faltering nation could strengthen the Union and use that strength to dissipate foreign threats. So he wrapped up his vision in one spine-tingling cry . . .

"Go West, young man! Go West!"

Because he proposed action . . . because he gave them something bigger than themselves to live for . . . because his vision put decision in their hands . . . they answered him. They flocked West.

Some died by the arrows of the Sioux and Apache. Some turned bad. Some turned back. But trails were cut, rivers bridged, rails laid. Seed was planted, wire was strung, towns built. Inexorably the inspiration of youth with open-eyed purpose conquered the frontier. The Union survived its schism; the foreign threat dissipated before the accumulated strength of American youth resurgent. Russia sold Alaska to the United States and withdrew from the Pacific coast. The American people were freed for many years to grow in peace.

Is that not what we seek today . . . to grow in peace? Does the chance seem slight? Have we forgotten the history of our land?

The surges of destiny are authored in the convictions of youth. Our real security lies in our continuous ability to penetrate successive frontiers of whatever nature, and so deeply that the strength derived is adequate to security.

The air ocean is the frontier of our day. We are as uniquely equipped to its conquest as were our forebears to the frontier of a century past. That nation which remains far to the fore in penetration of air ocean resources will accumulate security against all aggression.

Now certainly airpower has recognition among us as an essential military element. Certainly also the value of air commerce has been exemplified in scheduled transportation. And too, American business lately turns with avid interest to private ownership of aircraft.

But these instances are not evidences of historic concept. They were not born of the impassioned plea . . . Look up, young man! Look up!

Over against them must be placed a vast astigmatism . . . a spineless recitation of hazards . . . a community weeping of nuisance . . . a federal parsimony on airports . . . a politically ridden policy to industry . . . a vacuum in national youth program.

These conditions are not evidence of vision in the American tradition. They cry no new frontiers. They are the voice of frustration rather than of challenge. And they are more to be feared than the intrigue of Communism or the dismal capitulation suggested by weary allies.

Yet the frontier is still there. The chance is still opportune. The surface of the vast air frontier is barely scratched. It may well be that the demonstrated futility of alliances and the frustrations of seeking to balk aggression by piecemeal interventions, will serve to turn our people back to solutions within their realm of proven experience.

Then some great voice of our time will catch up the whisperings of we who can not be heard beyond our own wing tips, and cry out . . . Look up, young man! Look up!

They will listen because in the midst of confusion he speaks sanity and hope. They will take action because the logic of better destiny is in his vision. They will forge a new era of prosperity and security by out-distancing the aggressor on the air frontier.

And we shall have peace upon our perimeters because we shall have built within as we know how to build.

Gill Robb Wilson

Gill Robb Wilson
Editor and Publisher

"American Airlines, Inc. carries more passengers than any other airline in the world."

The Barco's jungles, inhabited by the Motilones, the world's most unfriendly Indians, stretch ominously to the horizon.

At Rio de Oro camp, armed oilmen inspect Motilon arrow fired into barracks sometime in the night.

CHIEF PILOT, Bill Hightower swung his C-47 over a slash in the world's most inhospitable jungle. Bill and his co-pilot were alone—save for 7,000 lbs. of cargo—cases of shotgun shells, crated furniture, mule feed and drilling supplies.

This tree-top-level stuff isn't monkey-shine flying. Dead ahead looms a clearing. From its mid-center rises an oblong communal dwelling, thatched and steep-roofed. It's one of a dozen such houses scattered in a dozen such clearings along the wildly vegetated Colombian-Venezuelan frontier.

As the C-47 comes in on a shallow dive, figures dart from the house. Some—a quick glance tells Hightower they're near-naked women—run for the jungle's cover. Others—men—stand their ground. A group of the men clamber to the house's ridge pole. Booswiiisssh! The C-47 roars low over the clearing. And as it does, a shower of arrows comes winging up. Not just a handful, mind you, but scores of them, propelled with terrific force from 6-ft. bows. As the plane climbs for altitude, the warriors straddling that roof-top shake defiant fists.

Up front, Hightower contacts headquarters in Cucuta . . . "Joe, that house the drillers worried about . . . it's occupied . . . full up . . . Indians haven't begun migration yet . . . OK?"

JUNGLE OIL

One of the world's most difficult civilian airlifts hauls cargo cheaper, ton-for-ton, than barges or rail lines.

By JAMES JOSEPH

Typical Motilon arrow with notched tip, making removal very difficult.

Mission complete, the C-47 swings southwest toward Barranquilla and the Caribbean, continuing its daily run.

Indian scouting—fully as important down here now as it was on the old western frontiers has made it possible to keep Colombian Petroleum, "Colpet" for short, drillers in the field. Make no mistake about it, this sector is a seething battlefield—has been through nearly 25 years of guerrilla war by the world's most unfriendly citizens: Colombia's Motilon Indians.

No one, not even anthropologists, know very much about Motilones. They maintain no contact with other tribes, preferring complete isolation. And that isolation is assured by their uncanny marksmanship which can drive an unfeathered arrow clean through a man at 70 yards. The Motilones have pin-cushioned more than 120 oil-field hands since 1936. And, since drillers oftentimes work but a few jungle kilometers from their communal villages, constant air reconnaissance is important. Come dry season, the Motilones migrate riverwards in search of alligator eggs. En route they ambush petroleum crews working Colpet's humid and dangerous Barco Concession.

When planes report a village deserted, nearby oil outposts double their guard. At deep-jungle sites, field hands strap on more 38's and never venture from their heavily protected barracks without shotgun or rifle.

Hightower, with 15 years and 9,000 air hours over Colombia—most of it in the Barco—has seen more Motilones than any man alive. For seldom do victims catch sight of their jungle assassins. Over the past 25 years, only three Motilones have been captured—all of them young boys.

Motilon scouting is, of course, but one detailed phase of Hightower's job. As boss of Colpet's three planes, he runs an operation which, plane for plane, consistently carries more tonnage than any other operation in the world. During an average month ("they're all 'average,'" says Bill), Colpet's C-47's tote more than 1,000,000 lbs. of cargo and in excess of 2,000 passengers—at an overall cost of $50 a ton. Flying only a daylight schedule and a total 180 hours each month, Colpet planes actually deliver supplies $20 a ton cheaper than their closest competitors—river barge and railway.

"We pay our way," beams Hightower, "always have."

By anybody's standards, Colpet's airlift constitutes a full-blown private airline. It operates as many as three times a day schedules from headquarters in Cucuta, to company strips—at Tibu camp, isolated Rio de Oro, and at Covenas, the company's pipeline terminus on the Caribbean. Another, but now little-used, airfield is located at Petrolea, once Colpet's main Barco camp. Weekends planes tote personnel into Cucuta from Tibu and Rio de Oro, carry them back to work again on Mondays. These weekend jaunts are essential morale builders, bringing relays of Tibu's 2,000 men and Rio de Oro's 200 into town, where most have families. Emergency flights—hauling out the sick and arrow-wounded—are numerous. Besides the camp-to-camp thrice daily schedules, there's a daily run from Cucuta to Barranquilla, 70 air minutes to the southwest.

There are also semi-monthly jogs into Bogota, Colombia's capital city. C-47's span the Cucuta to Tibu route in something under 25 minutes—compared to five to seven hours by road and rail, one to two days by river. Without airlift, Rio de Oro, a drilling outpost deep in Motilon territory, would find itself isolated.

Rio de Oro and Tibu are but 17 minutes apart by air, although a long day's drive by truck or tractor down the pipeline road. And the pipeline route is none too safe, judging by the vehicles which occasionally ply it, their cabs screened with heavy mesh "Indian" wire. Not once in 15 years has a Colpet plane failed to meet a schedule because of weather. And only once has there been a serious accident. This occurred in 1939, during the line's second year of operation, when a Ford Tri-Motor cracked up in the jungle.

Colpet managers admit frankly that, were it not for airlift, they'd have a tough time keeping men on the job, notwithstanding the $60 a month "hazard" bonus for working the Barco. As it is, many of Tibu's 110 Americans are veterans of six, even 15 years on the Barco. Most have bought homes and have their families in Cucuta.

"Wouldn't work these cursed jungles two minutes," a burly driller declared, "if I didn't get outside every weekend."

Without airlift there'd be no weekends and production would be considerably less than the 25,000 barrels per day currently pumped from the 200 wells.

It's one thing to operate a cor- (*Continued on page 52*)

Shadows of the Korean Air War at Geneva

A famous British War Correspondent reveals for the first time how decisive U. S. Air Power compelled the Communists to beg for the Armistice in June, 1951

By WILLIAM COURTENAY, O.B.E., M.M.

NOW THAT THE ALLIES have met the Communists at Geneva for peace talks on the Far East, it is appropriate to recall the decisive role which American Air Power played in defeating the Russian plot to steal South Korea and unite it with North Korea under Communism. That plot was cleverly hatched in Moscow.

The Yalta Conference of February, 1945, agreed that both sides should occupy Korea temporarily, dividing responsibility at the 38th Parallel.

Russia secretly intended to drop an Iron Curtain as soon as her forces set up their outposts.

This she did in September, 1945, refusing all collaboration between North and South, despite the fact that all had promised the Koreans unity and independence; that Korea was simply to be placed under United Nations control for five years training in self-government; and that we were all then to get out.

Behind that Iron Curtain Russia commenced communizing the northern peasants. Three million of them wouldn't take it and fled south. Thus, when the Korean War began on June 25, 1950, there were twenty-three million Koreans south of the 38th Parallel and only seven million in the North. That is about the proportion of population today. Then, when the U. S. sent a Commission to North and South Korea to ascertain the wishes of the people concerning their future form of government, the Russians would not allow the Mission to enter Pyong-Yong in the North.

Behind the Iron Curtain they built up a peasant army 200,000 strong while no army was then being raised in the South. When the plot was ready to hatch after five years secrecy, this army, spearheaded by 400 Russian T-34 tanks, jumped the 38th Parallel at 4 a.m., June 25, 1950. It took Seoul and prepared to march down the main highway to Taejon, Taegu and Pusan. Their Field Intelligence revealed later they planned to reach Pusan by August 15, 1950—the second anniversary of South Korea's Independence.

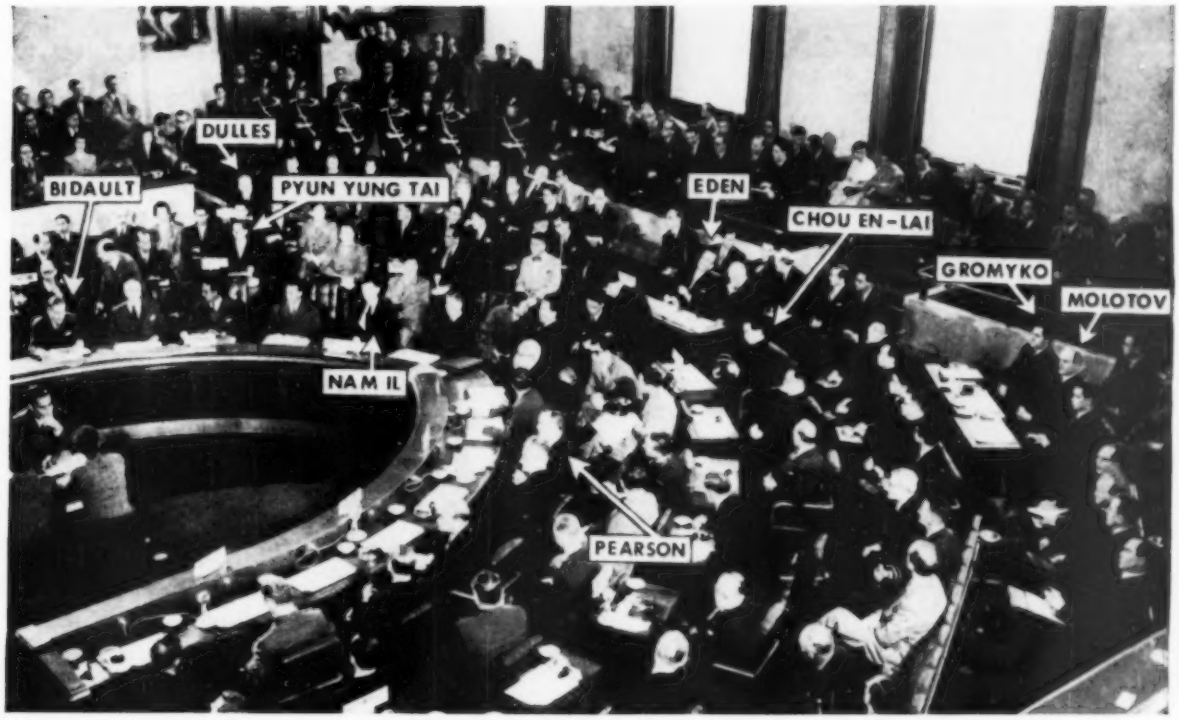
All that stood in their way was a hastily raised South Korean Force of 50,000; dressed in American hand-me-downs; without tanks; and armed with 2.5 bazookas which were but pea-shooters against the armour of the T-34 tanks. All American troops had been withdrawn to Japan in 1949.

Why then, with all the cards stacked against South Korea, did the enemy fail to reach Pusan by August 15th; why did he never get there; why was it that, three years later when 'Cease Fire' was sounded on July 27, 1953, he was nowhere in South Korea but was back well north of where he started?

The answer lies largely in the role of U. S. Air Power.

There were five reasons why the carefully rehearsed timetable planned

Mr. Courtenay is currently lecturing in the Far East for the British War Office on the origins and campaigns of the Korean War. He is a distinguished veteran pilot and War Correspondent whose experience has covered the globe. He was three years in Korea. He has analyzed, especially for FLYING readers, the elements of the Korean War which he feels influence Soviet thinking in relation to possible total war.



Opening day of the Geneva Conference in the U. N.'s headquarters drew delegates from 19 nations in an attempt to bring peace to Asia.

in secrecy for five years was wrecked in the first five weeks; and four of them show the influence of Air Power.

First the Russians studied the meteorological reports for a 50 year period to decide on the right time of year for launching the blow, free of air interruption. They found that Korea habitually has a rainy season for two months from July first of each year. It brings low clouds and poor visibility, with mists swirling through the valleys. They did not fear the small U. S. Occupation Army in Japan. This was limited to four very under-strength Divisions. They feared the U. S. 5th and Far East Air Forces dispersed around Japan. So they selected June 25th as the opening date, thinking the Air Force would not be able to see what was happening, much less operate.

But the rainy season missed out in July and August 1950—for the first time in 50 years. The 5th Air Force and 77th Squadron of Royal Australians immediately moved from Japan to Korea. From airfields at Taegu and Pusan, and Pohangdong on the east coast, the pilots built up 750 sorties a day to help the South Koreans remain in business. That was the first reason why the plot was to misfire.

General MacArthur told me after that, when the North Korean Army first captured Seoul, it paused for six days waiting for its artillery to cross the Han River before risking further advance. He said, "This was a great mistake; they had their tanks across the river; they should have followed their luck with them and might have taken all Korea. By pausing for six days, they gave me just the time I needed to rush the first U. S. troops back from Japan."

The bombers of the U. S. Far East Air Force had destroyed the mile-long railway bridge over the Han River—the bridge which carries the main railway from North to South Korea. The Communists required six days to ferry their guns across the river in consequence. Those six vital days—won by the U. S. Bomber Forces in the opening phase—sunk the enemy's timetable. That was the second cause of their defection.

On July 9th when the war was but 15 days old, pilots spotted a great convoy moving southwards from the lower bank of the Han River. The convoy was 50 miles long—bumper to bumper. It comprised guns, tanks, troops, supplies—the great battering ram intended to force the way to Taejon, Taegu and Pusan. The airmen went to work on it in relays hour after hour and destroyed it. This set the Communists back several more weeks.

In the fourth case, the Strategic Air Force entered the picture. On July 8, 1950, General Vandenburg instructed the 15th Air Force to move to Japan. Nine days later, Maj. Gen. "Rosie" O'Donnell had moved 130 B-29's 8,000 miles across the Pacific and gone into action. I flew my first bomber mission with them on July 18, 1950. In the first 100 days of the war, they destroyed all the industries of North Korea and blew out all the bridges between the Yalu and the Naktung rivers. This delayed still further the enemy's timetable and multiplied his supply problem. By the sum total of these four air actions we won precious time just when time was the thing which the Soviet plot sought to deny us.

It gave General MacArthur time to airlift the 24th Division into Korea to fight a rearguard action from Suwon to Taejon under Maj. Gen. William F. Dean. It gave time for the 1st Cavalry and 25th Division to reach Pohangdong on July 18, 1950, and join in the fight. It gave time for the 2nd Division and 5th Marine Regiment and 5th Regimental Combat Team from Hawaii to arrive in early August. It gave time for British troops to arrive at the end of August from Hong Kong.

In the next phase of the decisive role of air power, the pilots virtually destroyed the North Korean Army from the air after General Mac- (*Continued on page* 66)

An evaluation of the sleek executive aircraft fleets which have opened up new vistas for American business.

By L. C. PHILMUS

OFFICES

THE IMMEDIATE POSTWAR years are best remembered for rash planning which was to bring the private flying age to the U.S. Enthusiasts foresaw hangars replacing backyard garages and the airplane replacing the family car. The aviation industry tried to ride this wave of enthusiasm to prosperity.

End results are well known. The lightplane industry took a nose dive. Fixed-base operators were dazed by disappointment.

While the industry licked its wounds, a new phenomenon was quietly taking shape. American business was eyeing the air. Industrialists had been awakened to air transportation during the war years. Because of the pace set by wartime economy, executives had learned to use the airways. During those years they began planning use of aircraft in corporation activities.

By 1946, the market was flooded with surplus aircraft. This was the beginning of the corporation aircraft fleets. Industrialists bought these planes and converted them to individual needs. Today more than 5,000 companies are operating some 10,000 aircraft, both new and surplus. Of this total, about 1,750 are multi-engine transports.

The business fleet as a whole has been logging more than three million hours a year for about 300 million aircraft miles.

Use is not restricted to large business concerns—several thousand small companies, utilizing smaller planes have discovered them to be keen business tools.

Types utilized range from Cessnas, Pipers, *Navions* and to the DC-3, Lockheed *Lodestar*, Grumman *Mallard*, Twin Beech, and in some cases, the Douglas DC-4. Originally having to depend almost entirely on surplus and used aircraft sales, the business fleets are varied. The CAB has figures on the number of some multi-engine types in service: 265 DC-3's; 210 *Lodestars*; 45 Grumman *Mallards*; four Convairs; two DC-4's; 626 Twin-Beeches; and 140 Grumman *Widgeons*. In addition military surplus has contributed 15 B-23's; 15 *Venturas*; 25 B-25's; 25 A-26's; three B-17's; and four B-24's.

This business fleet brought new prosperity to lightplane manufacturers. Ninety per cent of 1953 sales of 3,788 one to ten-place aircraft, a ($34,458,000 value) were made to the business group.

Adaption of used and surplus aircraft has, in turn, created a new multi-million industry within an industry. Plane conversion and modification has become a highly specialized service . . . major overhauls, engine changes, airframe modification. Interiors of some executive aircraft are things of beauty. Divans, desks, special lounge chairs, conference rooms are necessities. The interiors carry out their function—flying offices, similar to the type the executive utilizes on the ground.

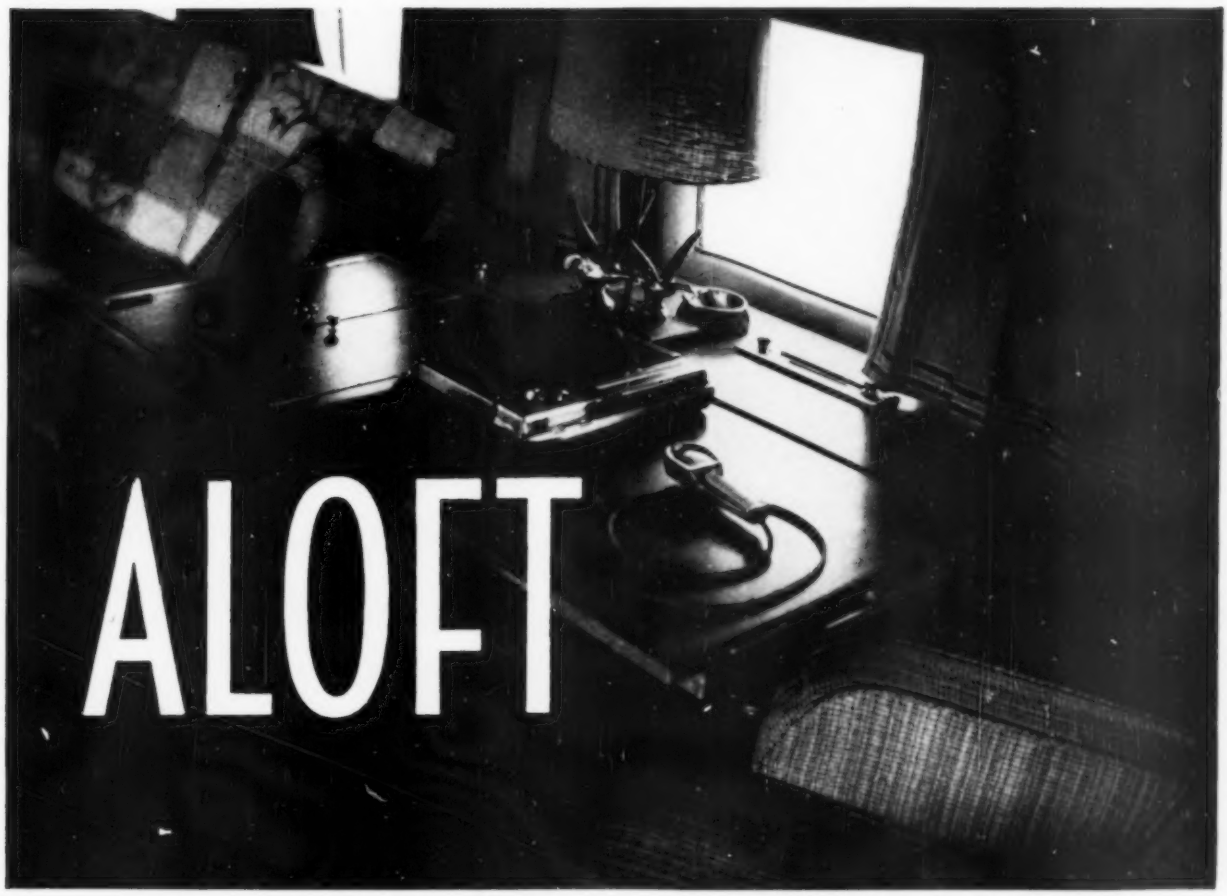
All this costs money—vast sums. Cynics have said rescinding of excess profits tax would see the end of such spending. Users do not feel this way. The economy and convenience of their aircraft cannot be measured alone in hard dollar value. Fleets are being expanded. The policy of flying top executives only is being revamped. Advantages are found in making aircraft available to all key personnel.

Many fixed-base operators are also enjoying unprecedented prosperity because of the "flying offices". In 1953, the business aircraft group deposited 300 million dollars in the hands of service organizations, distributors, and airports, for equipment, fuel and oil, storage, landing fees, maintenance and overhaul.

Who uses the aircraft?—The roster reads like a standard business directory . . . oil companies, newspapers, retail firms, automobile concerns, farm machinery manufacturers, investment firms, construction companies, glass works, lumber and paper industries, fabric mills, etc.

For example, Sears, Roebuck Co. currently operates four aircraft—two DC-3's and two Beeches which log 2,400 hours a year. Tying together 1,000 factories, offices, mail order plants, and retail stores through North and South America, the aircraft receive high utilization. Working with a staff of four pilots and five co-pilot mechanics, Chief Pilot J. V. Swanson is responsible for scheduling. To get highest utilization, the aircraft are based in three key areas in the U. S.; Chicago, Los Angeles, and Atlanta.

The Gaylord Container Corp. of St. Louis, manufacturer of paper products, classes aircraft as absolute necessities. Chief Pilot L. L. Dorrance is in charge of a six-plane fleet consisting of a DC-3, three Beech D-18's, a *Bonanza*, and a Cessna 195. The company's mill and forests are near Bogalusa, La., an area with inadequate rail transportation and lying 70 miles from the nearest airline stop. The four twin-engine aircraft are used almost exclusively for executive travel but in emergencies carry parts and supplies.



Interior by conversion and modification specialists, Remmert-Werner, in DC-3 owned by the Mather Iron Co., Cleveland, Ohio.

The single-engine aircraft are used for photography, fire watching and patrol.

One of the most powerful corporate fleets is that of Arabian American Oil. The company uses two DC-6B's and one DC-4 alone for its scheduled overseas service, shuttling personnel between the U.S. and the Middle East. More than 6,000 Americans are employed by Aramco overseas. Every Wednesday and Friday planes leave Idlewild in New York for Saudi Arabia, with return flights on Tuesday and Thursday. After a trial period, a new employe's family joins him, and often there are many children on board the transatlantic flights.

But this is just one segment of the operation. In Saudi Arabia, the fleet of 18 aircraft is based . . . two Convair 340's, seven DC-3's, four Twin Beeches, and five *Navions*. The 21-plane fleet chalked up 40 million passenger miles and 2 million ton-miles in one year. At least half the flight operations are scheduled. Flights run five times weekly between Dhahran and Beirut, with stops along the Trans-Arabian pipe line. Three times a week flights run to Asmara. The single-engine equipment and Beeches carry passengers and cargo to hundreds of drilling camps in the area. Aramco's operation dates back to the 30's and it is felt could not function without the aircraft.

This is just a small cross section of corporate activity. Each multi-engine plane is estimated to fly 600 hours a year and single-engine, 400.

Keynote of the business fleet is safety. Their proud record is 0.5 fatalities per 100 million passenger miles. To maintain this record, aircraft are sent in for major overhaul every 500 hours on an average. The business fleet makes prodigious use of navigation and communications equipment. Every latest, flight-tested device is incorporated. The majority of the instrumentation is dual in the cockpit.

Pilots are carefully selected. In the majority of cases, they must have ATR's. Their instrument proficiency is maintained. Each chief pilot is responsible for periodic check rides. Semi-annual physicals are compulsory in most companies.

To develop safety consciousness, the N.B.A.A. has set up a safety standard committee, with subcommittees to deal with standards for maintenance, weights, and pilot qualifications.

Businessmen are shrewdly watching development of the small twin engine craft now being produced by Piper, Cessna, Riley, Beech and Aero Design. Another concern is for an eight to ten place, 300 mph, pressurized aircraft that will sell for under $250,000. One manufacturer estimates that 500 such aircraft could be sold within five years.

The block in the way of production is financing. Large airframe manufacturers who can afford to firance such a plane are tied up in military work. Smaller companies cannot afford the estimated $3 million to see the aircraft up to the production line.

But in the meantime, even with equipment available, business flying has become big business and sound business since it grew from economic demand and has proved itself an essential tool in the competitive markets of the world. END

Above: AOPA planes arrive at Tom Garner's Chilko Lake Lodge, 150 miles north of Vancouver, B. C., where Chilko Lake empties into the river of the same name. The magnificent Chilko mountains surround the lake. Land planes may use a nearby airstrip. Below left: Twelve trout enthusiasts board jeep to drive to favorite fishing hole.

Below: Guide Tom Cunliffe, Jr. of Chilko, Dick White of Tacoma and Mr. and Mrs. Floyd Austin of Tillicum, Wash., admire their fine catch of trout taken from a popular fishing hole two miles down Chilko River from the lodge.

Right: Jim Galvin's Piper Pacer and Jim Walthew's Cessna 170 cross Fraser River to enter Fraser Canyon en route to Chilko, after clearing Canadian Customs at Chilliwack, B. C. Eleven AOPA land and sea planes made the 375-mile trip from Seattle to Chilko Lake.

Cruise to Chilko

AMONG THE MOST popular club tours made recently by AOPA'ers of the Seattle, Wash., area was an 11-plane week-end jaunt to famed Chilko Lake, B.C. Despite marginal weather, the group made the tour without incident. The area of Chilko, difficult to penetrate except by aircraft, abounds in big game and record trout. Bob Spring, top flight photographer of Seattle, made the cruise to get the picture record for FLYING.

Although the terrain is rugged, check points are good. The Fraser River is a guide to Lillooet from Chilliwack, B. C.

Below: AOPA'ers on diet, beware! Stay away from the dining hall of Chilko Lake Lodge. Nobody can look up even to get his picture "took." The "grub" is plentiful and the coffee hot. Wow!

J. H. Carmichael, Capital Airlines' president, (right) with G. R. Edwards, managing director of Vickers-Armstrong Ltd., Aircraft Division, discuss *Viscount's* Rolls Royce turbo-props.

Capital's Big Step

of inaugurating the use of

British turbo-prop Viscounts on short-haul routes

is being watched with keen interest.

By JAN H. BOGARDUS

The Vickers *Viscount.*

FOR SEVERAL YEARS U.S. Air Commerce has eyed with interest the British jet transports. Majority of this interest has centered around large super-speed types powered by turbo-jet engines.

As the reality seems about to prove out, the actual introduction of British jets to the American scene differs somewhat from the speculation. Capital Airlines, with short-haul routes, will place in service by April of '55, the medium-sized, medium-range, Vickers Armstrong *Viscount,* powered by four Rolls Royce *Dart* turbo-prop engines.

The combination of Vickers and Rolls is firm in the aviation tradition. It was a Vickers *Vimy* bomber powered by Rolls Royce *Eagle* engines in which Alcock and Brown first conquered the North Atlantic in 1919. Vickers aircraft pioneered the routes from England to South Africa and Australia. And in post-war times it was Vickers which supplied the Royal Air Force with its first production 4-engined jet bomber . . . the *Valiant.* Additionally, the civil piston-engined transport, Vickers *Viking,* has been Britain's most numerous post-war carrier.

Veterans of the late war will recall that Rolls Royce *Merlins* drove most of the fighters in the Battle of Britain and, besides powering the *Spits,* were also in the *Mosquito* and *Lancaster* bomber.

Thus both the airframe and engine sponsors of the *Viscount* have high stature in the history of aviation.

As to the *Viscount* itself . . . it is the first transport ever specifically designed for turbo-prop engines. The prototype was first flown in mid-year, '48, and the model saw limited service two years later. By mid-'52 the production model was aloft, and in April, '53, British European Airways put a fleet of *Viscounts* in routine operation. The plane has been in use on European routes ever since and will enter Trans-Canada's service shortly.

Original design concept of the *Viscount* in 1945 called for a 24-place airliner powered by four 800 static horsepower *Darts.* When, however, the *Dart* proved up at better than 1,000 shp, the *Viscount* was "stretched" to carry 32 passengers. By 1949 the *Dart* was producing 1,400 shp and the *Viscount* was increased in span and size to a 40-48 passenger ship. This is the type-700, three of which Capital will initially put in service. Span is 97 ft.; length 81.2 ft.; empty weight 33,115: payload 13,315; maximum loaded weight 58,500 lbs. Normal cruise (*Continued on page* 64)

THE PRO'S NEST

Instrument Flight

Sooner or later there comes a time when a pilot must know his instruments.

By JOHN R. HOYT

WHAT IS THE HARDEST part of instrument flight? Is it the wiggling gauges that won't stay put? The closed-in feeling of the enveloping fog all around the plane? Or is the lack of a Basic Rule the reason why it is often difficult for the average pilot to get on the gauges and stay there?

When you first learned to fly you were taught to feel the airplane, and you learned stalls in order that you would recognize the stall by feel, and thereby be able to avoid an inadvertent stall. You did this by visual reference to the horizon and the ground, and it was excellent training indeed.

Today we are adding instrument flight to our syllabi; the ICAO agreements have stipulations about instrument instruction, and the day is passing when a pilot is considered competent if he is limited to CAVU—VFR flight. Sooner or later in a pilot's experience there comes a time when he must know his instruments, and then his safety depends upon being able to use them.

In this article there is an Easy Rule which is a must for good instrument flying. It will help any pilot to improve, even if it won't pass the flight test for him. (Let it be clear that there is no way to make flying the gauges a cinch! In many military and CAA flight tests I have observed that almost any pilot can be taught to fly smoothly enough to herd the airplane around the sky, but many pilots fail an instrument check because they cannot think. There is no Easy Rule for thinking!)

But there *is* an Easy Rule that will form a habit in instrument work that will leave more time for thinking and planning. Obviously, if a pilot is working so hard to fly the plane that all his efforts are expended on technic, he can hardly be expected to think clearly and quickly. If we can develop an aid such as an Easy Rule, we can help ourselves tremendously.

So let's sit down in the cockpit and look at our instruments. Although there are many different kinds, there are four which we must have: the turn-and-bank (or "needle-ball"), the airspeed indicator, the altimeter, and the compass (Fig. 1). Other valuable instruments are the gyro horizon, gyro compass, and rate of climb indicator. The first four are called Basic Panel (or Partial Panel) and are used for Instrument Rating flight checks by CAA; the entire group is called Full Panel and is used in ATR flight tests. In addition, there are other instruments which Civil Air Regulations require, such as the clock with sweep-second hand, tachometer, and so on, but these are adjuncts and do not concern our flying technic.

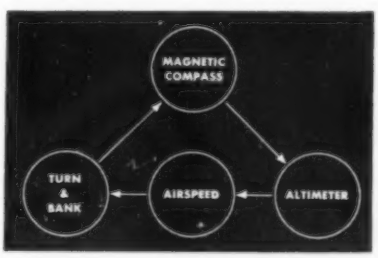


FIG. 1.
The Basic or "Partial" Panel. Scan the instruments in the direction of the arrows.

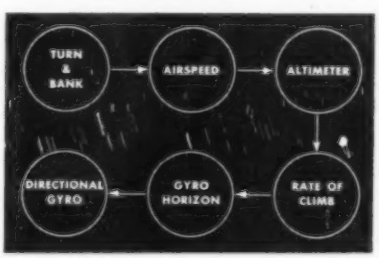


FIG. 2.
The Full Panel. Scan the instruments in the direction of the arrows.

The rule about to be described applies to either Basic or Full Panel. It was discovered by an enterprising instructor in a Link Trainer, who found that his students could not use two instruments simultaneously. For example, if the student tried to hold his altitude constant, his heading varied. If he tried to hold the heading, the altitude changed.

One day the instructor had what was undoubtedly a brilliant idea. He placed a small light bulb behind each of the important instruments and connected the light bulbs to some contacts on a revolving wheel. The light bulbs then lighted in rotation: first the turn-and-bank, then the airspeed, then the altimeter, then the compass, and so on until the wheel completed one revolution and the turn-and-bank lighted again.

Inasmuch as all pilots do not agree on the exact sequence of instruments, the order in which they were illuminated is not too important. What does matter is that an Easy Rule for flying instruments was re-emphasized, which is simply: SCAN THE INSTRUMENTS *SYSTEMATICALLY*.

In other words, don't stare at the airspeed, or the altimeter, or the turn-and-bank. Keep your eyes moving not just haphazardly, but in a fixed pattern: start at the upper left, go across to the right, go down, read back across to the left, and start over (Fig. 2). Whatever you do, don't stare at any one instrument, and don't look at it for more than two seconds. (The actual time spent on one instrument will vary with the individual, and some pilots may spend only one second per instrument, some will spend three. But three seconds per instrument is almost too much because, with four instruments, it takes 12 seconds to get back to Number One, and in 12 seconds the altitude of the plane can change considerably.)

Form the habit and never break it. SCAN THE INSTRUMENTS SYSTEMATICALLY: if you haxe six important instruments, scan them. If you fly heavier planes with more gauges, learn to stop the sequence occasionally at a certain instrument, go over to your radio, your gas gauge, your pressure-temperature group, etc., and then back to your routine of scanning.

This brings us to another subject which is a (*Continued on page* 50)

The story of the new Cessna 310

Business asked for it

By DWANE L. WALLACE

President of Cessna Aircraft Company

ONE MORNING RECENTLY in Wichita a visitor from Chicago taxied up to our back gate in a converted twin-engine military transport. This man was an excellent example of today's flying businessman. After visiting us, he planned a business lunch in Tulsa, a call later in the afternoon in Dallas and an evening engagement in Houston. The following morning, he would make another call in Houston, fly to St. Louis for a second important date and return to his Chicago office the same afternoon.

He was able, by having his own airplane, to write his own schedules—to go where and when he wanted—to explore more markets personally and do business face-to-face with more people than he could have dreamed possible a few years ago.

He considered his airplane a business tool . . . very much worth the cost.

Yet—as we walked to his plane for his departure—he told me *he had spent more to convert its interior than the total retail price of one of our new 310 Businessliners.*

I'll tell this story for two reasons:

One, it illustrates the value today's businessman places on his airplane . . . the time it saves, the contacts it makes possible, the new markets it helps reach. These advantages far outweigh even the high costs of converting and operating surplus military aircraft, or planes designed primarily for airline use.

Second, this conversion of surplus military planes to business aircraft has served as a research program for those of us who have been watching the post-war, twin-engine market, attempting to determine whether or not it would bring demand for a fast, low-cost, modern, twin-engine airplane.

Dwane L. Wallace

This man and others like him answered the question affirmatively. Large expenditures have been made for converted twin-engine airplanes. As a result, several companies have made twin-engine entries in the ever-expanding business plane field.

There is no question but that the market for business airplanes is a sound and rapidly growing one. More and more big corporations and small businesses are buying airplanes. And it is solid growth because it is based on *business* performance; i.e. performance of the airplane in the business: performance proving over and over that the airplane is a *profitable* addition to a company's necessary equipment . . . in demand by the administrative and sales division *and approved by the accounting department.*

Once the key man has been persuaded to try a business plane, he likes it! When he sees the costs for business-plane travel—and evaluates them in time saved for himself and his important associates—he likes it even better. Then the way is opened for the first time for the pilot executive. In some cases, instead of hiring a company pilot, the top man and his associates have learned to fly. Instead of trading in the company plane at the end of the year, they have kept it and added another.

This "dipping-the-toe-in-the-water" and finding it so delightful that they plunge all the way in, is true of both small and large corporations. I can cite examples of a company and a corporation located within a few miles of each other. The small company started with a single Cessna 170 and today has three of them in operation, with salesmen piloting themselves to all parts of the country. The president of the large corporation once threw up his hands in horror when one of his important men purchased his own personal plane. Since then, the president has tried business flying himself. Today on the night telephone list of the home office of this great corporation, *fifteen names* are listed under the heading "Pilots."

Safety is always pertinent to business flying. More has been done in the past five years to make flying safe and practical for the business owner than was done in the preceding 45 years. Don't dismiss that as just an enthusiastic statement by a man who is making airplanes. We were even using the wrong frequencies for our radios until some five years ago. Today's radio is like picking up your telephone. You can actually understand the man in the tower. If you add a "gadget" to your VHF receiver, you can navigate anywhere in the country just as well as an expert, because there are now some 450 omni-ranges in operation.

Today business flying is practical. Our labor over the past 25 years is beginning to pay off. We now have planes priced within the reach of every business. Properly used, they are beyond any question, REAL BUSINESS TOOLS.

It isn't hard for a businessman to buy something that will pay a return on his investment.

Our new twin is just the latest of these. The number of military conversions showed us that business wanted a fast, modern twin-engine airplane . . . that many more would want such an airplane if the original and operating costs were lower than those of a converted plane. So we spent six years developing and perfecting the airplane now known as the Cessna 310.

It may seem difficult to predict the future of the twin-engine market. I do know that the *need* is almost unlimited and, knowing the American way of doing business, I make the assumption that therefore the market is practically unlimited. The American businessman is interested in new markets, and in exploiting them in the most profitable way—not necessarily the cheapest way. Today, via company aircraft, executives are out calling on people they would have never met, or even thought of calling on before the day of the executive airplane. Cost of operating the business planes is nothing compared to the cost of losing business to alert competition.

Top: Sleek answer to the need for twin-engine business aircraft, the Cessna 310. Center: interior showing well-arranged panel and pedestal. Left: Refueling tip tanks which serve as tip discs and substantially reduce tip losses.

And now a word about our 310. Why is it built as it is? How does it meet the needs of today's progressive businessman?

Let's start with our objective . . . a low-cost, high-performance twin-engine airplane that would allow travel in great comfort and safety at airline speeds and owner convenience, and with less cash outlay than for a conversion job.

Early in 1948, we set up a program to determine what type of twin-engine airplane should be included in our line—a twin with the greatest over-all sales potential. Seven models were carefully studied and exhaustive wind-tunnel tests conducted on three of the configurations. In the meantime, we were listening to our sales organization; our distributors, our dealers and their customers.

The Cessna 310 configuration was the result of all this—a high-performance, comfortable, five-place, low-cost twin—with definite eye appeal. The ship has many importantly different and interesting features which help it meet business needs within the limits of practical aerodynamic design.

The cabin section, for example, is a compact package but big and roomy inside. We gave exceptional attention to the seating problem. Advanced technique was used in structural design and outside contours of the fuselage. Seating arrangement is—two in front and three in the rear, with an aisle between the front seats enabling the pilot to enter last, and to facilitate changing seats in flight. We have adequate head and leg room—so the occupants will be comfortable whether flying or riding.

Wing design incorporates tip tanks for the ultimate in safety. Fuel tankage is located as far as possible from both power plants and cabin. Refueling is greatly simplified. Certain aerodynamic advantages also result. We were able to reduce the span (*Continued on page* 71)

Above, left: Mock wooden tank near brick fortification in tactical ground gunnery range laid out to simulate real Korean battlefront. Above: Camouflaged mock wooden cannon on Gila Bend gunnery range. Lower left: Foreign fighter pilots from countries of the Mutual Defense Assistance Pact in pre-flight briefing at Luke AFB.

Right: Republic F-84F *Thunderstreaks* fly over Mojave desert at Luke AFB near Phoenix, Ariz.

The BIG EDGE

There is a war going on in the desert of southern Arizona as we train fighter-bomber pilots.

By MEL SOKOL

THERE'S AN OLD ADAGE . . . the good die young. But it's not true in air combat. There the young live to tell their grandchildren. Training is The Big Edge.

Even as far back as World War I, the American airman got the best breaks the country could give him before he was thrown against the enemy. Plenty of boys arrived in France to battle the Kaiser with several hundred hours of flight training in their log books. A French, British or German lad averaged less than 50 hours.

The pattern set in those days has always been a fetish with Americans. Training refinements and thoroughness has been a continuous build-up over the years. That's one big reason why, in every conflict throughout air history, our score against any enemy has been brilliant.

When the nature of air war in Korea was largely restricted by political fiat to tactical operations, the Air Force was thrown up against the problem of tailoring its operations to fit requirements . . . interdiction and ground support. That politics reversed decisive air doctrine geared to win wars was a decision beyond the power of the Air Force. So the impact of the role assigned airpower in Korea had to be absorbed in every respect . . . clear back to training of combat crews.

Korea was a rough theatre for tactical aviation and the guerilla nature of the war intensified the roughness. Mountainous terrain, small and mobile targets, frequent poor visibility and the art of camouflage made the indoctrination of a tactical pilot a subject of considerable importance.

Out of this situation grew a new concept of training . . . duplication of actual war theatre conditions where airmen might familiarize themselves during training processes.

Thus Lt. Gen. Robert W. Harper, head of Training Command, set up a Crew Training Air Force and chose certain training areas to produce realistic conditions.

Southwest of Phoenix, in the high Arizona desert country, lie the 4,000 square miles of the Gila Bend gunnery range, reasonable facsimile of northern Korea mountains. Here a simulated enemy was installed . . . artfully camouflaged trenches and bunkers, mortar pits, howitzers, anti-aircraft guns and all kindred trimmings of a battle front.

Fighter bomber airmen bound for Korea polished themselves off in ten weeks of operations over this God-forsaken layout. They learned to identify pill boxes, vehicles and accoutrements of the enemy. They learned the angles of gunnery, rocketry and bombing in tortuous terrain. In short, they absorbed the characteristics of the theatre into which they were going.

Luke Air Force Base, near Glendale, Ariz., a ghost field for five previous years, was reactivated in Feb., 1951, to serve as Hq. for this fighter-bomber training. Most of the trainees came from the advanced jet fighter school at Williams Air Force Base at Chandler, likewise in Arizona.

A bit of detail about the realistic training which made it possible for our tactical airmen to deadlock the Red masses of troops in Korea might be interesting.

Luke men practice air-to-ground war on three different ranges against targets for skip bombing, high altitude bombing, medium angle bombing, rocketing and low angle strafing. For every three students, there is an instructor pilot, their flight leader on all missions. They fly four-plane formation at all times and are taught to hold it, come hell or high water.

Targets on conventional ranges are well marked and easily identified. Each plane is assigned a particular target. An airman from a control tower scores hits and misses and the information is relayed to the flight leader. The control officer is always an instructor and usually knows the instructor or lead man of the flight. Instructor pilots rotate on tower duty.

By the time they have flown their 24th mission over the practice ranges, the pilots have mastered all basic air-to-ground combat patterns and are blasting targets accurately.

Hitting a target is one thing. Finding it is another. In actual combat every artifice is used to conceal targets from attacking airmen. So Luke added a camouflage course and a tactical ground gunnery range to its training program.

The camouflage course is used solely to give pilots practice in detection. It is laid out like a real army front, as is the ground gunnery range, and covers 14 square miles. Foxholes represent enemy's outpost and main line of resistance. Tactically disposed and camouflaged as they would be in combat is a complete assortment of Russian tanks and artillery of all calibres. Back of the line is a convoy and a supply dump protected by anti-aircraft. The fighter crews get a pretty good idea of where to look for what. They learn, for example, that if they locate one field artillery battery, chances are that there will be others in the area.

General location of ground targets to be attacked is known to the students as it is in actual combat. However, it is up to the students to spot exactly the camouflaged targets and hit them.

While the camouflage course is (*Continued on page 72*)

WILLAMETTE SKY PALS

have proven what a few

enterprising private pilots can do

to revitalize private flying.

By JAMES STANLEY HALL

ONE FEBRUARY DAY, 1953, a bit of an advertisement appeared in the Eugene, Ore. *Register-Guardian*. It read, "Anyone interested in forming a flying club meet at the Willamette Airpark next Sunday, 1 p.m. For further information phone Jim Hall, 40721."

It was as simple as that . . . the origin of the Willamette Sky Pals.

A group of us up here in Oregon decided we ought to get more fun out of owning private aircraft. Not that it isn't fun to tool around by yourself sometimes but only that it's more fun when we can gang up with congenial spirits on occasion. In fact, I've often wondered if more ganging isn't just what private flying needs most.

In any case, some 25 people showed up for that first Sunday meeting at the old Airpark. We dusted out the abandoned operations office, lit a blaze in the fireplace, and all started talking at once.

The Willamette Airpark just west of town was in the doldrums . . . closed . . . and there was strong talk of wiping it off the map. One by-product of our action that day was a reprieve for the place.

At any rate, we got ourselves introduced all around, generated an immediate enthusiasm for one another, and finally got down to the serious business of discussing an organization.

This led to formation of a committee which was to show up next Sunday, same time, same place, with a slate of officers and a club constitution. We showed, as per instructions, and henceforth have been in business.

The season, being winter at that time, was not conducive to immediate cross-country, so our first project was a club airmeet. The events were all pretty tame . . . balloon busting, spot landing and that sort of thing . . . but they gave us a chance to size up each other's flying, and to see all our ships together for the first time. The planes proved to be quite a conglomeration of types and models but, all in all, we were able to figure the squadron as having good potential for tours. In addition, the owners showed some surprisingly capable airmanship.

By the time spring opened in the high country, we were whipped into fine fettle. The regular weekly hangar-flying had consolidated our plans and built our morale. The less experienced learned from the veterans. Our initial spring cross-country trips were short but served for training. Then came summer.

Now we really went places. We joined all the major fly-ins staged by the Oregon Pilots Association and other area groups. We flew to the annual fish fry at Pacific City. We made planned excursions to the farms of club members to gain practice in landing away from airports. We took the squadron to a forestry strip in the McKenzie River country deep in the high Cascades, and got some exciting fishing.

The Sky Pals have found that each such jaunt introduces new forms of recreation. The more we have flown the more we have appreciated flying! Real friendships have been formed through sharing common interests.

We have discovered, too, that as time rolls by our collective voice allows us to be heard in matters pertaining to flying. We have protested an arbitrary State law that prohibits all aircraft from landing on Oregon beaches. We have thrown our weight into the fight to keep Eugene's prized Airpark in being.

Willamette Sky Pals picnicking at Paradise Forest Camp. Inset: The author and president of the club.

It doesn't cost much to be a Sky Pal. You pay a $2. membership fee and 25c a month dues. Last count showed 32 members owning 27 airplanes.

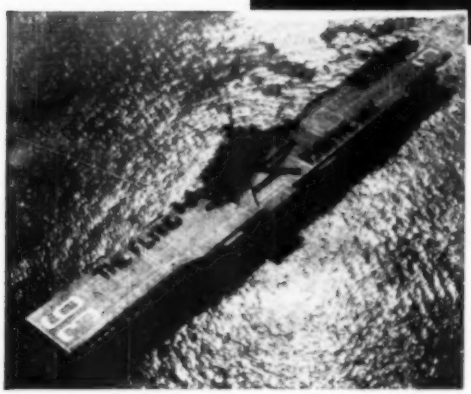
One member is a locksmith, another runs a garage, some are truck drivers, farmers, a crop duster, appliance repairman, etc. No rich man's flying club this. We are not all men, either. Wives take an active part, with several being card carrying members.

Winter in Western Oregon curtails private flying considerably. Rain is the norm and low cumulus blankets the mountains much of the time. But some flying is done and, when the last Wednesday of each winter month rolls around, members will converge upon the Airpark regardless of weather.

Lights will burn late. Business meetings will get longer. There will be refreshments and movies. Plans will be taking shape for a new flying season. When the geese go over again, we'll be up there with 'em.

Maybe the best satisfaction of all is that we have found each other—recaptured an old northwest tradition—neighborliness. Nor has it required any special ingenuity—any group in any community can do what we have done. In fact, we pass along our experience hoping that other flying folk will be prompted to do just that. END

The USS *Antietam* (right) after canted deck conversion. Below: As she looked as a conventional carrier.



CANTED DECK

This departure from conventional carrier decks may prove to be the beginning of a whole new era in Naval Air War.

By CMDR. W. G. WINSLOW, USN

BECAUSE SHE WAS FIRST of the carriers to have her fighting face lifted, the USS *Antietam* recently leaped to sudden prominence as the hottest thing in the fleet, potentially the most powerful flat-top afloat.

The alteration, known as the canted deck, is so simple and has added so much mobility to her striking power that old Navy pilots are wondering why no one thought of it before.

In fact, the canted deck appears to be one of the most momentous strides in Naval Aviation. It may even be the beginning of a new era in Naval air war.

A very few years ago many contended that jets could not be operated from aircraft carriers. They believed that jets, heavier and larger than conventional planes with their high landing speeds and tail pipe blasts, would present impossible problems to limited carrier decks. Additionally, they held the jet's poor rate of acceleration would prevent it from taking a wave-off in the event of a bad approach.

Whether or not jets could operate successfully from carrier decks had to be determined. One grim faction was obvious. If Naval Aviation was to remain a major weapon, then aircraft flown by Navy pilots must match or surpass the best that could fight against them. Navy had no alternative . . . jet aircraft must operate from carriers or else. Months of grueling trial and error ensued. Each problem was met methodically by airmen grimly determined to succeed. By the time of Korea, Navy and Marine jets were able to fly night and day from carriers against the Reds.

But the young jet age shoots relentlessly ahead. New aircraft with fantastic speeds and capabilities evolve from drawing board to reality so rapidly that, as fast as one problem is resolved, another sprouts up to replace it. Navy planners striving desperately to meet the problems inherent in new aircraft hit upon the canted deck. The idea seemed logical. If it worked, Navy would have a platform for launching and retrieving the most powerful jets.

The USS *Antietam*, a veteran of Korean operations, was chosen for the experiment. A new addition was made to the port side of her flight deck. This allowed the landing area to be offset eight degrees from the ship's fore and aft centerline. The usual arresting wires remain on the after portion of her flight deck, but the barriers are missing.

Barriers have been standard equipment on flight decks since Navy's first aircraft carrier, the USS *Langley*. Located about amidship, they prevent a plane which fails to engage an arresting wire from crashing into aircraft parked forward on the flight deck. With jet aircraft, barriers weren't enough. Occasionally a jet, because of its great weight and high landing speed, knifed through the barriers and smashed into parked aircraft forward with resulting loss of lives. To prevent this, a barricade designed to stop anything capable of plowing through the barriers was erected beyond (*Continued on page* 60)

Goodyear's three flying crews represent 100 years flight experience and the business fleet has covered three million miles in the last ten years without accident. Left to right: First Pilot Sam Merrill; Ben Swineford, Flight Operations Manager; Don Kinsell, Co-pilot; Ralph (Bud) Seidner, Chief Pilot; Jack Heimbaugh, Co-pilot; First Pilot Charles Reeder and Dick Falk, Co-pilot.

OF MEN AND SHIPS

The world's largest rubber company has operated a fleet of multi-engine aircraft over three million miles without wrinkling a wing.

By J. V. WILSON

"OUR COMPANY HAS AN unwritten law which both our executives and pilots understand and respect. The pilot has the first and final 'say' on whether a plane will take off or stay on the ground."

It was the Chief Pilot of Goodyear's veteran fleet of business aircraft, J. Ralph (Bud) Seidner speaking. The comment was apropos of the fact that the Goodyear fleet, one of the largest in industry, *has flown over three million miles in the last ten years without wrinkling a wing.*

"Last year," continued Seidner, "in 1,716 business flights we covered 360,000 miles, did business in 36 states, and made numerous trips out of the country."

"Pilot proficiency and preventive maintenance is the answer," supported Bill Swineford, Flight Operations Manager. "Not all officials share our enthusiasm for flying," he added, "but all do have full confidence in our crews. All of our first pilots have had major airline experience. We don't cancel one scheduled trip out of a hundred because of weather or mechanical failure. About half of our total logged time is on instruments. But when a pilot says 'no soap,' that's the law of the Medes and the Persians. Our executives never try to influence a pilot's decision."

These comments of Seidner and Swineford indicate such a healthy mental attitude on the part of Goodyear executives that the subject is well worth exploration. Nor does a reporter need to search far.

The executives themselves are thoroughly grounded in the disciplines and procedures of aviation. Perusal of company logbooks shows that Mr. Paul Litchfield, Chairman of the Board, is the best customer of his own com-

pany fleet. Long an inveterate air traveler, he has flown more than three-quarter of a million miles. Goodyear President, M. E. J. Thomas, and Vice Presidents, R. S. Wilson, and J. M. Linforth run him a close race. "Such travel is indispensable to us," explained D. W. Critchfield, manager of the Western Division office, who has logged 680,000 miles of flying. "Remember, we have 22 domestic plants to tie together across the nation, to say nothing of sales requirements, research flying and innumerable calls for customer service of one kind or another."

"Yes," mused C. A. "Bud" Hulsemann, manager of the landing gear and industrial brake department, "and there are about 5,000 fields available to business aircraft. In 750,000 miles of hopping around I think I've hit the best part of 'em."

Of course, airmindedness has come naturally to this biggest of the world's rubber companies, since their wheels, brakes and other aircraft appurtenances have been integral with air progress since the days of the Wright brothers. In fact, the business fleet was started far back in 1929, about the time the low-pressure tire was introduced to aviation. World War II with its travel problems brought fleet expansion.

Then the era of the "flying salesman" was born. Eleven of the salesmen in Goodyear's Aviation Products Division personally fly smaller company ships on their field routines. E. M. "Ed" Eickmann, the old Purdue football star and blimp pilot, heads this division. He is responsible for the flight hangar (one of the few company owned) and all the airplanes. The "shop" to which all give credit for heavy contribution to Goodyear's remarkable safety record is manned by Joe Pinter and a staff of 11 licensed mechanics and radiomen.

Planes of the fleet are frequently used as "guinea pigs" for one or other aircraft accessory which Goodyear is constantly developing. Additionally, the company usually has on hand a number of aircraft loaned by the government on special military projects.

In toto the Goodyear fleet numbers 28 aircraft of which 18 are assigned to the Goodyear Tire and Rubber Co. and 10 to the Goodyear Aircraft Co. Flight crewmen and maintenance men number 77. An employees' flying club with an average of 50 dues-paying members owns and operates six light aircraft. L. J. Koons, former Northwest Airlines pilot, and now ops manager of Goodyear Aircraft's segment of the total fleet, points out that he dispatched on his planes last year 120,000 lbs. of high priority cargo in addition to all the personnel carried.

Paul W. Litchfield, Goodyear Tire and Rubber Company's Chairman of the Board, is one of the company fleet's best "customers," having flown some 750,000 miles.

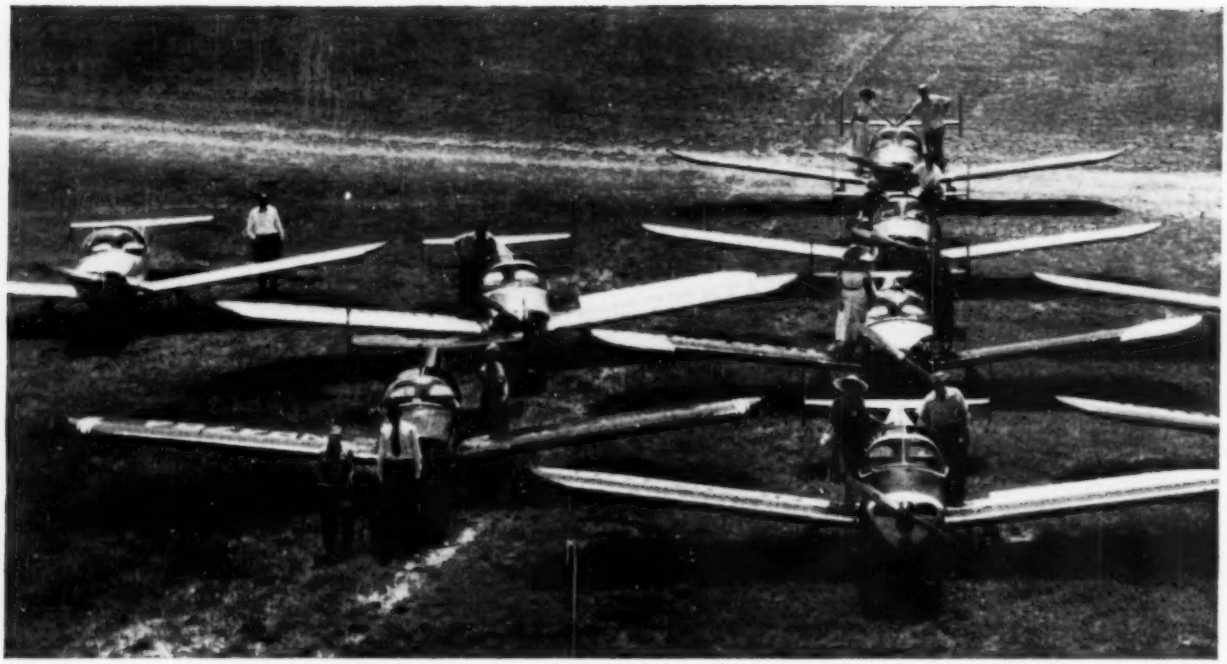
In a search of the company logbooks we find the most extensive single trip made was a 10,000 mile trip through Alaska, made by Mr. Litchfield in 1945. Bud Seidner flew the tour in 14 days. Another interesting item noted was that on Saint Patrick's Day of 1948, Sam Merrill, one of the First Pilots of Goodyear, flew Francis Cardinal Spellman from New York to visit Mr. Litchfield at his La Loma, Ariz. ranch. Sam must have felt no sweat that day. What could happen to an Irishman flying a Cardinal on Saint Patrick's Day!

The airplane as a business tool? How do we evaluate it? "Well," mused the big boss of sales, H. W. Crum, "our planes are such an integral part of our business that I would have to ask, how do you evaluate Goodyear?"

"What's in a name," we nodded. And, too boot, business flying is 50 times safer than those highways and cars. Probably there is no greater testimony to the achieved safety of flying than that American business, in ever increasing volume, trusts its best brains and brawn to air travel.

END

Part of Goodyear's "private airline" at the home base in Akron. Ships are used on business trips to link company's 22 far-flung domestic plants.



Michigan Ercoupers

LAST YEAR Frank Fulkersin of Flint, Mich., an Ercoupe owner, sparked an idea and hied himself forthwith to the Michigan State Department of Aeronautics at Lansing.

There he culled the names and addresses of all other Ercoupe owners in the state, 150 in all, and addressed himself to each and sundry on his idea —the proposition of banding together for fun, frolic and flight.

The idea clicked and the Michigan Ercoupers came into being and proceeded to action. Week-end flights to one or

Some Michigan Ercoupers "hangar flying" at their annual meet in Traverse City. Frank Fulkersin, Dr. Loren and Jane Sheffield, Roy Hubbard, Mollie Fulkersin and Larry Brimmer.

Left: A spring line-up at Muskegon Airport.

Joyce and Joseph Croaby of Portland, Mich., and George Grabill and Bob Read of Grand Rapids, Mich., arrive in their *Ercoupes* for annual weekend meet.

another of Michigan's many resorts, fellowship meetings between local owners, picnics, and home parties constitute the program. The eager beavers practice formations and all exchange valuable experience in maintenance and operation of the little ships.

To all pilots and aircraft owners the opportunities of "hangar flying" are highly profitable, but to none more than those who fly similar types.

FLYING publishes pictures of the Michigan Ercoupers, not to report on their activities so much as to call attention to the idea of aircraft type owners getting together for exchange of experience and, incidentally, for great fun.—Ed.

Left: Planning another air meet, Dr. L. Sheffield, David LeBarre, Frank Fulkersin and Alfred Hubbard. Above: Everyone has fun at "Paul Bunyan" initiation, featured in annual meet at Traverse City.

PAPA pilots and Hughes Trophy. Left to right, kneeling: Mel Landon, Clark Fitzgearl, Ed Moore, president of AFA, Inc., Lester Lamkin. Standing: Jerry Padula, Bert Lowrie, Bob Keisel, Bill Douglas, Pat Stateler, Herb Long, Irmyl Fitzgearl, Vincent McHenry, Jerry Eaton, Dr. W. A. Winn, Walker Harris and Kenneth Moore.

Club Safety Award

provides a great incentive toward increasing proficiency in private flying.

By CHRISTIE CAMPBELL

WITH AN EYE TO AGAIN creating a flood tide of action in personal flying, Donald Houghten of CAA's Fourth Region, at Los Angeles, Calif., gave birth to the idea of a competitive flying club program. This was several years ago.

Houghten then made three basic moves. He secured CAA backing of his idea. He enlisted the sponsorship of the Central Valley Empire Association, a powerful regional Chamber of Commerce covering seven counties and the fabulously productive area of the San Joaquin Valley of California. And he persuaded the Hughes Aircraft Company of Culver City, Calif., to create a majestic perpetual trophy for annual award to that flying club which, within the competitive program, each year compiles the best achievement and safety record.

Any flying club in the United States or its possessions, is eligible to enter the competition by filing a letter of intent, and agreement to follow the contest rules. Mr. Houghten is acting as Secretary for the Central Valley Empire Association and may be addressed at 5651 West Manchester Ave., Los Angeles, 45, Calif. The contest year extends from March 1 to March 1 annually.

Winner of the Hughes Trophy, among the Associated Flying Clubs in 1952-1953, first year of annual award, was the Porterville Area Pilots Association, a heads-up outfit which not only compiled an exceptional flight record but generated within its community a remarkable enthusiasm for, and appreciation of, personal flying. One outstanding feature of the Porterville program is an organized Moonlight Flight in demonstration of the fact that airmanship at the private citizen level is not circumscribed by the sun. Backing the Porterville pilots, other organizations in the town go all out to make the event a memorable weekend for visiting airmen. As a matter of fact, the virile record accrued by PAPA as first winner of the competitive club trophy set a standard which has given the trophy increased stature among airmen everywhere. So keen was the first year of club competition that among the San Joaquin Valley Clubs, 22 in number and involving 235 aircraft and 613 members, not one accident or violation occurred during the year. It is reasonable to assume that the club competition in which they were involved was a spur to the accomplishment.

Current holder of the Hughes Trophy, and winner in 1953-1954, is the Cape Ann Flying Club of Gloucester, Mass. This outfit, considered a medium sized club, (21 members plus 3 in the armed services) logged 900 hours in the year. During the same period, 17 members passed commercial pilot exams, one member received a flight instructor rating, a second his instrument card, and two members passed ground instructor tests.

Among activities scored for a club toward trophy competition are total hours flown; (*Continued on page* 66)

The Cape Ann Flying Club, Gloucester, Mass., 1954 winner of the Hughes National Aviation Trophy.

AD ASTRA PER ARDUA

Or the saga of ferrying one very decrepit "flying bathtub". Folks along the way would say, "We see it but we don't believe it!"

By A. L. CLEAVE

IT ALL BEGAN when one of our local mechanics bought, sight unseen, one of those C-3 Aeronca contraptions and asked me if I would pick it up for him. I had seen quite a bit of C-3's when they first came out and had developed a liking for the pot-bellied little airplanes. I told him I'd get it next time I got down Georgia way.

It wasn't long after that I got a ship to ferry south and, after delivery of the plane, hied to Macon to pick up the "bathtub."

Upon arrival, I went directly to the airport. As I rounded the corner of the hangar, I was stopped dead by the sight of the "Thing" squatting on the line. Then and there I was ready to get back on the bus and go home. However, after inspecting it, I decided it wasn't as bad as it seemed. Despite its odd shape and weather-beaten appearance, the airplane was in pretty fair condition. The two-cylinder engine was a horse of a different color.

Next morning we were out bright and early for take-off. Finally all was ready. Someone gave the prop a twist and the engine started with a belch of smoke and noise like a volcano. The ex-owner motioned me to get in. I crawled in beside him and tried to keep my sunglasses from vibrating down over my nose while he explained the workings of this erupter. It seemed that when the engine was first started, the oil pressure indicator needle vibrated madly between 30 and 90 pounds; after warming up sufficiently, it would vibrate between 60 and 120 pounds. Then you were ready to take off in all directions.

We got up steam, and away we went in a cloud of sparks. There were no brakes or steerable tailwheel. When you wanted to make a quick about-face, the procedure was to dump the stick forward, kick full rudder and blast the throttle. This was all very well on a calm day but with wind came complications and a frenzy of throttle blasting and rudder stomping to go in at least the general direction desired.

After a few landings at Macon, I decided to be on my way north before I scared myself any worse. I gassed up, got my suitcase aboard and climbed in. A crowd had collected because somehow the word had gotten around that "it" was going to Pennsylvania. All the airport personnel stood around with peculiar expressions on their faces. When I was ready, they came over one by one to the ship, leaned down and gravely shook hands with me through the small window. As I taxied out, I expected at least one of them to be standing with his hat over his heart.

I took off, circled the field, and glanced at my compass. It was spinning so fast that I couldn't even read the numbers as they whizzed past. Shuddering at the thought of following railroads home, I (*Continued on page* 54)

The Aviation Building of the Embry-Riddle School of Aviation located in Miami, Fla

The deep roots of EMBRY-

THE YEARS OF AVIATION history multiply. The pioneers pass. The twistings and turnings which account for the current structure of aviation in the land are apt to be lost to the record since no one thinks to set them down.

FLYING magazine recently reminded us that Embry-Riddle was probably the oldest major civil aviation school in the world and certainly in the nation . . . 28 years of operation. Would we prepare a sketch of those years for the record?

We would. At first it seemed a chore. Then, as we dug for the facts, the project became fascinating. How much we had forgotten about ourselves! Putting the bits of it together . . . the headaches and heartaches, the fun and folly, the courage and chance . . . has been mighty worthwhile.

Of course it can't all be told here. A thousand books could not tell it. Much of it is personified beyond record in boys who came here from all over the world and have gone out again all over the world to man the planes and administer the industry and keep the props turning in peace and war . . . some 50,000 of them.

We'll keep the comments about ourselves on the humble side . . . try to avoid the bragging . . . but of those who have gone from here to do the work of the air world we must be eternally proud.

Paul Riddle, founder of the school, laughingly admits that the school's big economic advantage back in 1925 was the fly-happy enthusiasm of a bunch of saxophone players, members of Ed Lewis' orchestra in Erie, Pa., where Riddle owned the Griswold Flying Service. Paul had little folding money but owned two planes . . . and a dream. He kept the wolf scarcely at bay by putting on air shows. The dream he sold to the saxophone players. They spent their salaries taking flying lessons and their spare time helping Riddle run his air shows. Capt Warren Vine, now No. 1 pilot on American Airlines, was one of them. Al Schultz was another. They joined Paul.

They don't pretend that their dream foresaw the school of today . . . the hook-up with the big University of Miami to win the Bachelor of Business Administration degree . . . the Executive Pilot courses . . . the profession of Aviation Administration . . . the technical ratings and all the range of specializations in electronics, mechanics and engineering. But they did hold that aviation would become something big enough in which to invest a life and they took hold of the handle and started to plow.

Thus Riddle was held together with his converts when he met the late T. Higbee Embry, who saw sense and some excitement in the dream. So, Mr. Embry, who had lots of folding money, became a partner of Mr. Riddle, and the company of Embry-Riddle was born in 1926 at Lunken Airport, Cincinnati, Ohio.

Even the landing field was a shaky proposition for the

fledgling firm . . . it was often under water from rampages by the turbulent Ohio River. But despite its problems, the company thrived and expanded its activities.

To the best of our knowledge, Embry-Riddle formed the first air express line in America, in 1927. The Waco OX-9's, which manned the tarmac, had to dive to reach 90 mph. The late "Jiggs" Huffman was then chief pilot and operations manager. Air express, precious little at first, was flown daily between Cincinnati, Dayton, Columbus, Akron and Cleveland. The line certainly wasn't fast or sure. However, despite numerous and varied difficulties, it prospered.

Embry-Riddle's bid on the Cincinnati-Chicago government mail contract in 1928 was accepted. In addition, the line carried passengers and gave instruction. The mail routes which it blazed from Cincinnati to Cleveland, Cleveland to Dallas, and Chicago to Atlanta, are today a part of the nation's airline system. Graduates of its instruction school are veterans in America's major carriers.

These pioneer aviators worked hard, but they had their fun. Mr. Embry and Mr. Riddle particularly enjoyed the Sunday afternoon air shows they sponsored. One of the first mass parachute jumps in history was a highlight of an Embry-Riddle air show on September 24, 1928, at Lunken Airport. Riddle jumped first, followed by Embry and a squad of the former sax players he had lured away from the Erie orchestra.

The files of American Airlines reveal Embry-Riddle as its first unit. The partners sold their airline in 1928 to the company which is now American Airlines. Mr. Riddle remained with the new organization. California beckoned Mr. Embry, so the official partnership between the two men was dissolved.

In 1932 Mr. Riddle left American Airlines to reestablish his school operation in Florida. He chose Florida because he believed the state's proximity to Central and South America would insure fast and profitable air development. He was right. Today, Miami International Airport houses 60 airlines. The first home of the Embry-Riddle Company in Miami was on MacArthur Causeway.

The company was re-organized in 1940 when Mr. Riddle and the late John G. McKay became equal partners. Mr. McKay was one of the South's outstanding lawyers and sportsmen, who had been intrigued with aviation since World War I when he was a lieutenant in the balloon corps. He came to Miami from Indianapolis in 1923. The alliance of the two men was destined to make history in World War II.

Riddle and McKay were among the second wave of flight operators called upon by General "Hap" Arnold in 1940. They accepted his challenge to assist in building an Army Air Force at personal financial risk. The schools they built were complete with swimming pools and athletic facilities . . . far beyond mere camp requirements. These schools were all financed by personal funds with no assurance of a return on their investments.

Mr. McKay was one of the few men with extensive business experience among the operators of contract flight schools. Due to his efforts, flight schools were made eligible for defense plant status. This greatly alleviated the financial hardships of the operators. The men with the knowledge of flight training met their commitments to General Arnold to "speed" the building of the nation's striking force.

Under the leadership of Riddle and McKay, with Capt. Len D. Povey as general manager, Embry-Riddle became the world's largest aviation school. The company operated Carlstrom Field whose cadets made history by flying 650,000 hours with but a single accident, along with Dorr Field, Riddle-McKay Aero College in Florida and Riddle-McKay Institute in Tennessee. In addition, they operated the Miami bases, which included Chapman Field, the Seaplane Base on MacArthur Causeway and schools for the training of technical personnel for all divisions of the U. S. Air Force and Air Transport Command. The technical schools occupied 48 buildings in Coral Gables plus the school's vast Aviation Building in Miami. Embry-Riddle also expanded into South America, where in Sao Paulo, Brazil, technicians were trained for the Brazilian Government.

In 1944 Mr. McKay purchased (*Continued on page 70*)

RIDDLE

The world's largest and oldest civil aviation school has come a long way since its humble beginning in 1925.

By M. PEAVY

In 1925, members of the original Ed Lewis orchestra were enthusiastic supporters of Paul Riddle's Griswold Flying Service at Erie, Pa.

An answer to the need for a simple, low-cost light plane which can be built in a short time by the average mechanic.

Stits Kits

By C. L. HAMILTON

WHAT WITH ALL THE hullabaloo about kits for home-built aircraft, FLYING thought it would be interesting to check the matter with one of the country's leading designers of custom built sport planes, Raymond Stits, head of Stits Aircraft of Riverside, Calif. Here is his very revealing statement on the subject:

"We all know there is a lot of talk about kits being the answer to low cost flying and having a ready market. But that's all it appears to be so far—just talk. I have found that there is a greater demand for a complete detailed set of plans on a simple airplane such as the Stits *Playboy*, and have sent dozens of sets all over the world in the past few months. To date there are at least 39 *Playboys* under construction, and many will be flying by the time this information comes out in print.

"In building the airplane from the ground up instead of buying the kit, the expense can be covered over a period of time, and the boys are getting experience and satisfaction in building for the pride in doing so."

While conducting experiments on midget airplanes over the past several years, Stits received hundreds of requests from all parts of the world for construction prints on his designs. He felt that the planes he was then working on, among them the Stits *Junior* with a wing span of 8 ft. 10 in., and the Stits *Skybaby* with a span of 7 ft. 2 in., were too small and tricky to unleash on the flying public. All requests were turned down with a promise that he would later develop a small plane ideal for home building and sport flying.

Many of the potential builders suggested characteristics they would like to have built into the proposed "super" sport plane. They wanted it to be easy to fly, stable, fully aerobatic, have a low landing speed with better than average cruise and top speeds, and be rugged enough to take abuse from student pilots. Construction should be conventional and low cost, powered by any light engine and blueprinted in a manner and with detail enough for the average mechanic to build in a short time.

In answer to these demands, Ray Stits came up with the SA3A *Playboy*, a single-place, low-wing sport plane. He believes it includes all the desired features and many more. For instance, unlimited variations could be made from the original *Playboy* configuration. Construction prints are distributed as a basic airframe design from which an airplane may be built and improved on or modified for experimental purposes as regulated under the CAR on home-built and experimental aircraft. Variations from the original would be high midwing, parasol wing, biplane, clip wing, racer, or widening of the fuselage to two places.

Used tubing for construction of the fuselage and tail group may be salvaged from "cracked" planes at a fraction of the new cost. Wing material is new spruce and plywood, but used parts such as tie rods, compression members, cables, pulleys, etc., are from other planes. Many other salvaged parts which otherwise would be too expensive are used, including instruments, tail wheel unit, Cessna gear, Goodyear brakes and wheels, wing struts, engine, prop, nose cowl and miscellaneous hardware.

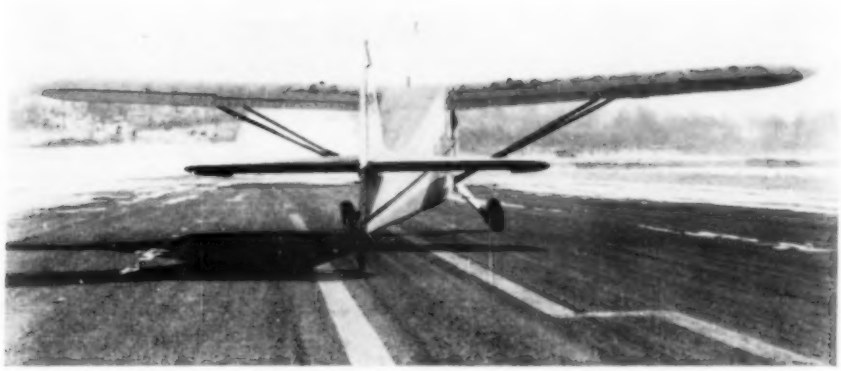
Total construction cost should be under $500, including a used "A" series Continental engine. The prototype of the *Playboy* was completed in 390 hours of labor at a total cost of $430.

Construction plans consist of ten large sheets and five 8 x 10 photographs taken of the uncovered prototype and one of the completed airplane. General construction information is also included to aid the inexperienced builder . . . an A & E license is not required to build an airplane. Price of the construction plans, photos and instructions is $25.

For those who insist on a kit, the *Playboy* can be purchased as a kit complete in construction and ready for fabric. All the owner has to do is install the standard aircraft parts that can be picked up used at local airports at a fraction of the new cost. These include engine, prop, wheels, tires, brakes, instruments, cowling, tail wheel unit, and small miscellaneous items such as safety belts. Price is $995, one-half down.

Provisions have been made by the CAA for licensing such a kit as an "amateur-built", and it is covered under CAR 174-3. Anyone interested in building an airplane either from a kit or from construction plans should get a copy of CAR 174-3 from the CAA. It not only explains the very reasonable limitations placed by the CAA on amateur-built aircraft, but is an essential guide to construction. (*Continued on page 70*)

The fully aerobatic Stits *Playboy* powered with a C-85 Continental "injector" engine.



Stinson landing in a crosswind using a castered gear.

Crosswind Gear?

Here's a pilot who has found it pays off.

By ERNIE WERNER

I'M not exactly an amateur pilot, yet I wouldn't be without castered gears if I could help it. I have logged over 200 hours with them and flown most types. These have included the Bellanca gear on its *Cruisair;* the Fairchild gear on its PT-19; the Firestone gear on the *Ercoupe;* the All-American gear on the twin Beech; the Goodyear on the Piper, Cessna, and DC3; and more recently the Geisse gear on the Piper and Cessna.

In at least one case, when I took the Bellanca down to demonstrate to Arthur Godfrey, it undoubtedly saved the plane and, perhaps, my neck. The engine quit on take-off and I had to put the plane down on what was left of the runway. There wasn't much left and, but for the castered gear, I'd have ended up in a vicious ground loop. With the gear I was able to make a high speed turn off the strip with no sweat.

Sure, I've heard that a good pilot has no need for a crosswind gear, but if I can come in across a 50 mph wind without having to worry about drift, I'm all for it. Even the greater latitude it gives me in picking a field for a forced landing is sufficient compensation for any damage to my professional pride. And beyond that, I want to use some of these downtown airstrips, regardless of wind condition. Meigs Field in Chicago is now closed to single-engine conventional-gear airplanes under adverse wind conditions, and others may follow this lead.

Geisse crosswind gear.

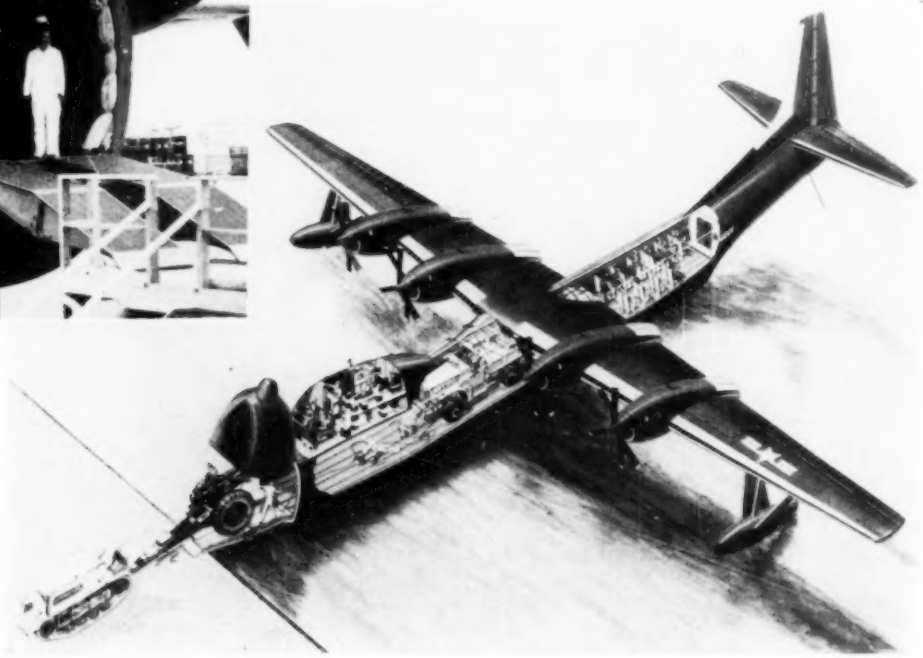
Don't blame the airport management for this restriction. They'll let you in if you have a crosswind gear. Despite the fact that with existing airports a large percentage of all landings can be made into the wind, the CAB analysis of all serious non-air carrier accidents disclosed that for all airplanes, including those with tricycle gear, one out of every five accidents was classed as ground-loop or roll-over. For one popular airplane over one-half of the serious accidents are in these two classes. For single runway airports, such as Meigs, these proportions would be much higher.

Do you know how good you have to be and when you have to be good to prevent ground loops? Can you visualize 10 degrees? It isn't very much. It is the drift you would have with a 10 mph crosswind if you touched down at 60 mph. Well, tests conducted in England on a representative group of conventional-geared airplanes disclosed that, with a 10 degree drift at touchdown, not even the most expert pilot can prevent a ground loop. Airplanes having a tendency to ground loop are much more sensitive than this. So you have to be pretty good before the wheels touch the ground. Being good afterwards won't help much.

My interest in castered gears started back when John Geisse was with the CAA and, since John is commonly called the father of this type gear, you have to sit down with this veteran to get the complete story. The idea was born in 1908; reborn in 1946 with the CAA as its angel, yet right now is standard equipment on only one production model, the Cessna 195, although available at extra cost on numerous other models. The castered gear's first cousin, the tricycle gear, was born still earlier—with the airplane in fact—reborn in 1935 with the CAA's predecessor as its father, and is now standard equipment on a majority of our airplanes.

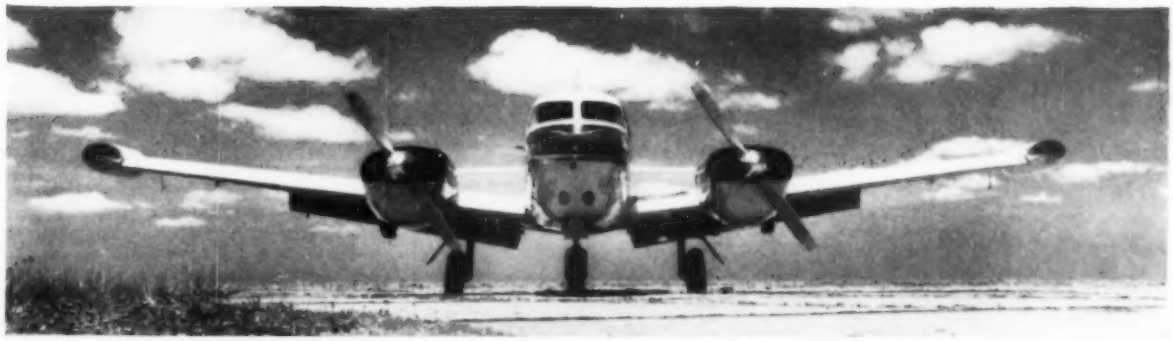
Why castered wheels when the tricycle gear itself has anti-ground looping characteristics? Well, if you have ever landed one in a high crosswind, you can answer that question yourself. They have a disagreeable tendency to roll laterally in such landings. In the CAB accident analysis previously referred to, over 25 per cent of all the serious accidents to one popular tricycle-geared airplane were listed as ground loops or roll overs. Castering of the main wheels of the tricycle gear would overcome this difficulty and such installations have been made by the Air Force on the C-54 and *Navion.* It has been reported that the performance in both cases was very satisfactory. (*Continued on page* 68)

FLYING LST Bow-loader version of the Navy's water-based turbo-prop transport, the four-engined Convair R3Y-2 is a water-based plane that can land guns, trucks, supplies or an assault company of Marines directly onto an enemy beach. It is scheduled to enter service late this year. For assault operations, the R3Y-2 lands offshore, taxis to the beach. When the hull touches the sand, the bow opens upward, a ramp is dropped and vehicles or troops debark directly on the beach. To pull off the beach, props are reversed and the ship backs away. The bow-loader can fly 24 tons of cargo, 103 men, or 92 litters and 12 attendants. Range is more than 2,000 miles and its rate of climb is faster than many World War II fighters. Its four Allison T-40 turbo-prop engines drive contra-rotating Aeroproducts propellers.



HAVE YOU SEEN?

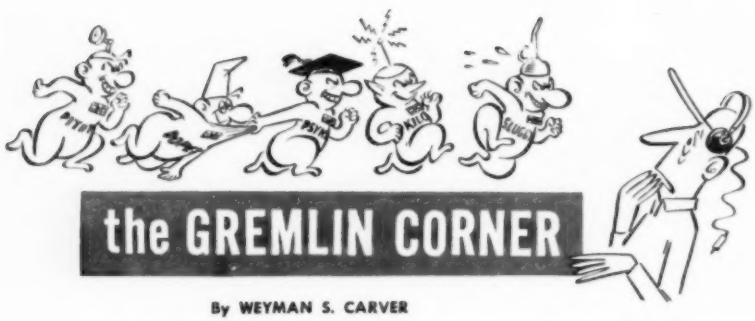
FLYRIDE Making a bid for the mass-helicopter market, Glenview Metal Products Company of New Jersey now has in test stage a two-place helicopter which the company claims is a "masterpiece of simplicity," using only two primary control units, a stick and a throttle. The stick governs forward, reverse and turn movements while the throttle, worked by foot, controls ascent and descent. It is powered by a 140 hp Lycoming located in the nose.



CAMAIR 480 Above and left: The Camair 480 is a twin-engine conversion of the Ryan *Navion* featuring wing tip tanks and 240 hp Continentals. Gross load is 3,930 lbs.; cruising speed with 70 per cent power at 6,000 ft. is 192 mph; rate of climb with two engines at sea level is 1,750 fpm, with one engine 450. Service ceiling with two engines is 22,000 ft, with one engine 8,000 ft. Range is 900 miles. Wing loading 21.3 lbs/sq. ft.; power loading with 480 hp is 8.2 lbs/hp. Useful load is 1,200 lbs. Fuel capacity is 108 gallons, of which over 35 gallons are carried in each of the wing tip tanks. Camair is the aviation division of the Cameron Iron Works, Inc., of Galveston, Tex., a major oil tool and equipment company.

BANTAM BOMBER Right: Smallest and lightest United States jet combat plane ever built, the Navy's Douglas A4D *Skyhawk* is capable of carrying atom bombs or rockets, machine guns, missiles. It has a combat radius greater than present prop-driven attack planes, is powered by a single Wright J-65 *Sapphire* turbo-jet. The single-place bomber was designed for simplified mass production and was completely built in 18 months from the beginning of design, an accomplishment believed to be without precedent. The Navy has said that the lightweight design philosophy incorporated in the A4D should open a new era of high performance jet attack airplanes.

TWIN TURBOROTOR Left: World's first twin-turborotor helicopter, a joint Army-Navy project, is being flight evaluated by Kaman Aircraft. Two Boeing 502-2 gas turbines power the Kaman HTK-1, producing 380 hp. Ship can be flown with one or both engines operating. Both are used for take-off and hovering, while in forward flight one is shut off.



the GREMLIN CORNER

By WEYMAN S. CARVER

EDITOR'S NOTE: *Herewith we proudly present the first great scoop of the second half century of flight . . . penetration of the Gremlin barrier! Over successive months, our daring reporter will smuggle out dispatches of immense value to airmen. Such as can be cleared for security will be published in this corner and as accurately as we can translate them from Gremlinese.*

"TROUBLE WITH MOST people is that they don't believe in gremlins," I heard the first voice say.

"Yeh, that's the trouble," a second voice agreed.

"I don't believe in grem—" I started to say, as I stepped around the front of my ship. Gremlins! There were four real, live gremlins, two sitting inside my plane with their legs hanging out of the door, one sitting on a tire and one lying on the hangar floor. All of them were munching avocado pears.

"Been expecting you," the fastidious looking one sitting on the tire said.

"Yeh, we sure have," the one on the floor said.

"We need you. You don't need us. So we'll get along good. Understand?" the fastidious one said.

"No," I gulped.

He looked up at the ones in the ship. They lifted their brows and turned their hands palms up in a "how dumb can he be" gesture.

"I'll draw you a picture," the fastidious one said, as he hopped from the tire and began pacing the floor. "We're gremlins. We make pilots outta pilots who don't know enough and who know too much. The ones who never learn—" he shook his head sorrowfully. "Curtains!" I felt goose pimples play leap frog up my backbone.

"I," he continued, "am Psyke. I put pressure on hot pilots psychologically." He waved his hand at the coveralled gremlin on the floor. "This is Sludge. He's a gas, oil, and engine man. And in the door Kilo and Pitot in charge of electrical and instrument systems."

"But—" I said.

"Dopey, our fabric and general handy man, is on lookout by the gas pumps. Now for business."

"But—" I said.

"We like avocados. You go to Florida pretty often and bring 'em back. So bring enough for us and just ordinary things happen to you. OK?"

I looked into four pairs of green eyes as four gremlins took bites of avocado and stared calmly back at me. They were not ordinary gremlins, they had rows of ribbons won in World War II and the Korean War. What could I say? "Yeh, OK, sure," I stuttered.

"Here he comes," Sludge said.

Another of the pint-sized dwarfs scooted under the ship and skidded to a halt. He looked at me. "Who's he?" he asked Psyke.

"Avocados," Psyke said.

"Oh," he said, as if that explained everything. He rubbed his hands together. "Rushing Riley is here."

Avocado seeds and peelings were thrown in all directions. Pitot and Kilo bounced to the floor. Sludge jumped up, grabbed an empty Coke bottle and began filling it with water at a nearby spigot. Before I could say more than "But, but"—" they were gone. I hurried after them.

When I got outside, Dooley, the gas attendant, was servicing a little, blue ship. A big, red-faced guy was pacing up and down asking Dooley if he could not hurry more. But that was not all. Psyke was sitting on the big guy's shoulder with his mouth to his ear whispering, "Hurry, hurry, hurry!"

Sludge was sitting on the wing pouring water from the coke bottle into the gas tank. Pitot was inside working on the altimeter. Dopey was sitting on the ground on the far side letting air out of the tire. Kilo was busy sawing away with a file on the radio antenna.

"You can't do that," I yelled at Sludge.

"Who can't do what?" the big guy said, as he looked at me.

"Sludge can't pour water in your gas," I said.

"The guy's crazy as a March Hare," Psyke said into the big guy's ear.

"Shut up," I told Psyke.

"Who're you telling to shut up?" the big guy asked.

"That runt on your shoulder," I said.

"A blasted lunatic," Psyke said in a stage whisper.

"In a hurry and run into a nut," the big guy muttered and stomped inside. "Hurry up with my change," he yelled at Dooley.

I rubbed my eyes as the big guy came charging back out stuffing his change in his pocket. Psyke was still on his shoulder. "You better preflight this ship," I yelled a little hysterically.

"Old maid nut," Psyke said in his ear. The big guy flung open the door of his ship, climbed in, kicked the starter and got the ship rolling before the engine caught good.

When the dust from the prop blast cleared they were all standing beside Dooley and me looking pleased with themselves. "Wait'll Riley finds what that altimeter is set on," Pitot said.

"Yeh," Sludge said, "and I also left the gas cap loose."

"He'll have a time landing with that half flat tire," Dopey said.

"You knuckleheads," I said.

"You sick?" Dooley asked, as he edged away fom me.

"I said a guy's a knucklehead who doesn't preflight his ship," I stammered.

END

NO. 175

Grumman F9F-6 Cougar, the type flown by the author on his harrowing flight.

I Learned About Flying From That!

The GCA unit was not functioning properly and this Navy pilot had to land or bail out.

By G. A. WATSON

I WAS RETURNING on a routine cross-country and had to make good a leg from Floyd Bennett in New York to the Naval Air Station, Oceana, Va. In the process I added more grey hairs to an already greying head. What happened will graphically illustrate how one small malfunction can pyramid to big trouble.

After paying my respects to the Great White Way for the first time in my life, I found myself in a familiar situation. I was far from home with scant folding money. It was imperative that I return to Jacksonville for the simple reason that I was broke. I had paid my respects through the nose.

The *Cougar* seemed in perfect condition on preflight inspection. I filed an Instrument Flight Plan after being briefed by aerology. New York had several thin layers of stratus. Oceana was showing 800 broken with a tendency to lift. There were several layers above the ceiling, with the highest at 15,000. That looked like a good risk to me.

Maybe I should have been sharper about it. Certainly I encountered nothing but trouble from the very beginning. The *Cougar* uses a new type of standardized jet starting unit, but, unfortunately, Floyd Bennett was equipped with the old style which do not fit the plugs on the F9F-6. From somewhere, my plane captain managed to 'conn' the correct type but not until my weather briefing was void. I re-filed, finding essentially the same conditions reported at Oceana.

As I got set for a light-off, I called for clearance. Departure Control asked if I would accept a VFR climb-out to 500 on top. I saw what appeared to be several breaks in the bottom layers, so I said that I would give it a try. Take-off was routine. After passing through a layer at 8,000 I found another at 18,000. I had to search a bit to discover another hole. When I finally broke clear, I was at 20,000.

After advising Departure Control that I had reached five-on-top, it became evident that I had flown pretty far out to sea in search of clear areas. I cranked Atlantic City on my bird-dog, but the signal was too weak to use. I decided to get back on the New York frequency and intercept my course. As my hand touched the crank, I heard an ominous pop in my earphones. The bird-dog was as dead as dead can be. I checked all the circuit breakers. It was hopeless.

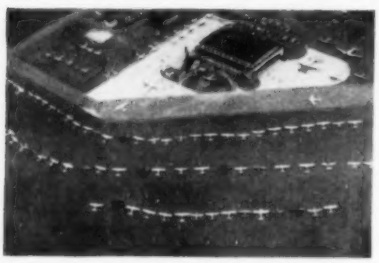
At this point, I pulled out the handy Mark IV Panic button and began to franticly press same. But realizing this would get me nowhere fast, I began to search for holes in the overcast through which I might descend and return to New York. At the same time, I tried to figure my approximate position. I turned to what I thought would be an approximate course for Oceana and watched for those elusive holes in the soup. I turned on the Yoke George (YG) set, but I was too far away to pick up Oceana. All I could do was wait.

If you have ever been above a solid overcast with no navigational radio, you know how lonesome the feeling is. Minutes went by, as I became more and more apprehensive. Finally, I heard a faint "dog—Willie-Willie-roger" come over the YG set. The correct heading for this sector was 210 degrees—right on course. All this time I had been climbing to maintain my five-on- (*Continued on page* 48)

Briefings . . .

SOUTHWIND Division of Stewart-Warner has announced a new heater called the Model 940 which has been designed specifically for single and multi-engine civil aircraft. With a rated fresh air heat output of 20,000 BTU/hr., the 940 is a small, lightweight, self-contained unit which requires no extra switches, controls or other devices.

WHEN READING AVIATION SERVICE held its Fifth Annual Maintenance and Operations Meeting at Spaatz Field, Reading, Pa., over 400 plane owners,



operators and pilots from the New England and Middle Atlantic states flew in for the occasion. Purpose of the meeting was to familiarize aircraft owners and pilots with new products and techniques in maintenance and operation.

THERE ARE 1,291 airports with paved runways in the United States out of a total of 6,760 civil airports and landing strips in operation.

CAR RENTALS by air travelers this year are running about 20 per cent ahead of the same period last year, according to Joseph J. Stedem, executive vice-president of Hertz Rent-A-Car System. Hertz operates more than 9,000 automobiles in 600 cities and at nearly 200 airsports.

SQUEEZED IN THE HAND, Floto, an automatic, self-inflating, pocket-sized life preserver instantly inflates into a four-foot tube that can support two adults. It can be attached to belt or clothing and

can be thrown like a ball to a person in distress. Made of tough vinyl plastic, it weighs eight ounces, is emergency yellow. Price $3.95. Refills 75c. Lucas Manufacturing Co., 4156 North Lowell Ave., Chicago 41, Ill., or Abercrombie & Fitch, 45th and Madison Ave., New York 17, N. Y.

TRANSFER of 170 Army L-17 *Navions* to Civil Air Patrol has been announced. They will augment CAP's fleet of 570 Piper L-4's, Aeronca L-16's and Convair L-5's. Allocation of the L-17's to CAP was made possible by an Army program phasing out the L-17 as a light personnel carrier.

ONE HUNDRED Javelin Single Axis Automatic Pilots have been ordered by Cessna for installation in its 170's and 180's.

SIGMA CHAPTER of Alpha Eta Rho has opened an Aeronautical Library and reading room in the Air Transportation Department of Los Angeles City College.

COMBINING ALL FUNCTIONS of a cross-pointer meter and course selector in one unit, the new ARC-16706 Course Indicator is for use with Type 15D VOR airborne receiving equipment. No change in basic equipment is required for operation with this instrument. For further information write: Aircraft Radio Corporation, Boonton, New Jersey.

WINNER of the Hayward, Calif. to Tucson, Ariz., race was a 49-year-old Hayward realtor, Bertram Butterfield, flying an Ercoupe. Fifty-one planes finished the goodwill race sponsored by the 20-30 Clubs of both cities.

LEAR IS FLIGHT TESTING several new instruments which it believes will revolutionize instrument flying. Identified as NAFLI, meaning Natural Flight Instrument System, Lear believes that with the new equipment most inexperienced pilots can learn to control a plane on instruments within a matter of minutes.

LOW COST four-in-one GCA radar landing system has been announced by Gilfillan. Costing $37,500, the new system, called GCA-C Quadradar, incorporates height findings and taxi control as well as surveillance radar and precision approach control. Until now, GCA installations have cost about $500,000. Gilfillan says that the Quadradar will be in quantity production within 10 months.

IBERIA, Airlines of Spain, is christening its fleet of three Super Constellations for trans-Atlantic operations the Nina, the Pinta, and the Santa Maria in the tradition of the fleet of Spanish ships which sailed for the New World under Christopher Columbus on August 4, 1492. The 12-hour service between New York and Madrid is particularly interesting in contrast to the 71 day crossing made by Columbus.

BENDIX AIRBORNE RADAR system has been installed in a Bendix DC-3 for flight testing and demonstrations. Developed principally to provide commercial transports with evaluation of enroute weather

conditions, installations of the RDR-1 system already are being studied by both Braniff and Pan American-Grace Airways on regularly scheduled South American flights.

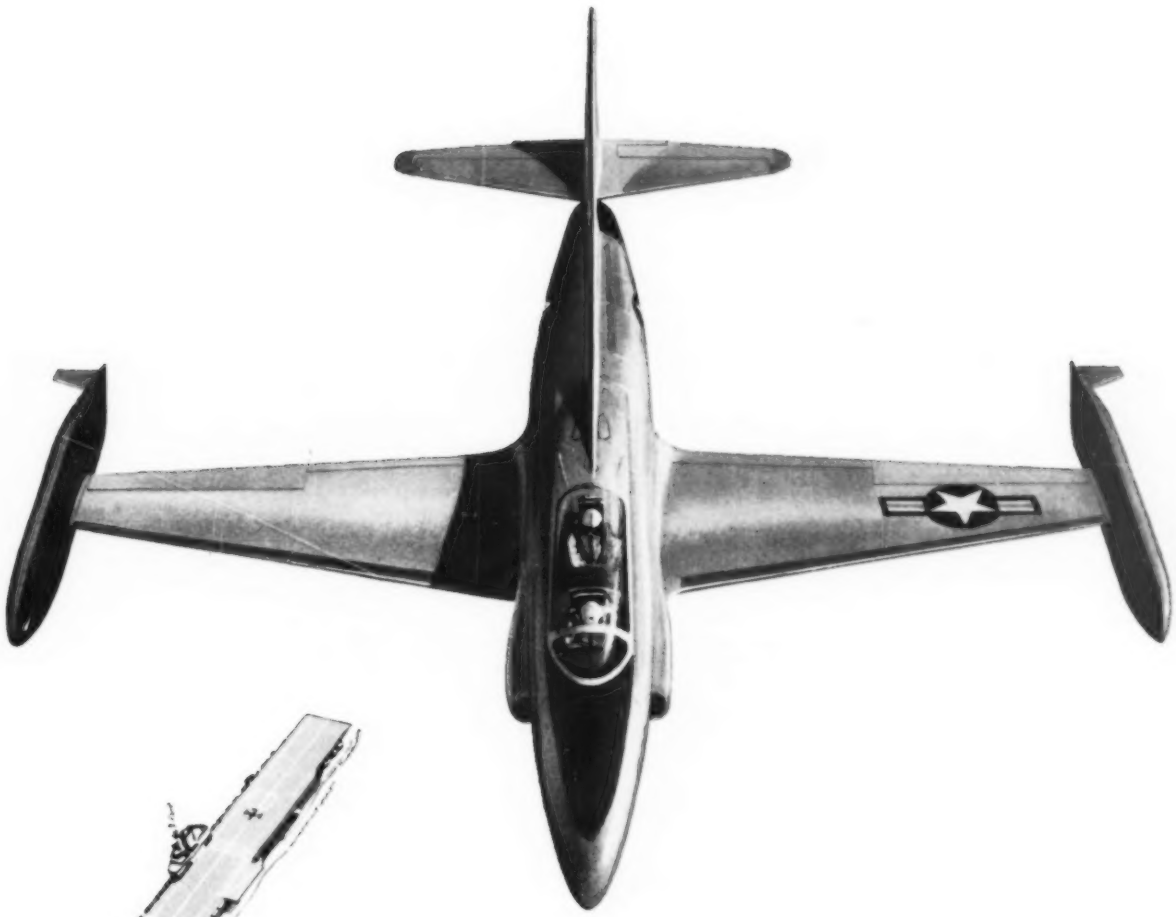
THE MINNESOTA State Department of Aeronautics is purchasing six TVOR units as part of a state-local-industry cooperative program to provide non-federal radio aid facilities to supplement the federal system. Tentative sites for the TVOR units are International Falls, Hibbing, Bemidji, Brainerd, St. Cloud and Austin.

TRIP INSURANCE for air taxi passengers identical to that available to scheduled airline passengers at 25c per $5,000 is provided by Floyd West & Company

of Dallas, general insurance agents. Agent Charles W. Tayman is shown here instructing J. O. Womack, right, president of Mustang Aviation, in how to write trip insurance coverage for his passengers. Coverage is exclusive to member companies of the National Air Taxi Service.

GRUMMAN WIDGEON conversion kits, including design, manufacturing and sales rights, parts fabrication tooling and

(Continued on page 63)



LOCKHEED SOLVES JET PROBLEMS IN SCIENCE OF FLIGHT TRAINING

Presenting Lockheed's Improved Navy and Air Force Jet Trainer

Here is a new jet trainer designed for *any* phase of jet flight instruction.

It gives maximum training potential, even down into lower phases of training now requiring propeller-driven planes.

Lockheed has engineered into this trainer aircraft a wide variety of new safety features, including stall slats and an elevated tail with greatly increased surfaces. It is beyond a doubt *the safest jet airplane ever built!*

For easier training of even better jet pilots, this airplane has:—an unrestricted canopy . . . a wrap-around single windshield . . . rearranged and redesigned seats, including a telescoped ejection seat . . . and a greatly simplified cockpit and instrument panel—all providing the optimum arrangement for tandem training.

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Look to Lockheed for Leadership

FLYING FARMERS

By BILL RENSHAW

A "TRULY FARMER'S" AIRPLANE

The campaign of this columnist to find a farm machinery manufacturer who would build and merchandise a farmer-type airplane received the biggest boost possible when Lee Talladay, National FF president endorsed the idea.

Writing in the National Flying Farmer Magazine, Talladay said, "Wouldn't it be a wonderful thing, and most practical, if a farm implement company were to manufacture a truly farmer's airplane." After mentioning that all major implement manufacturers have nationwide sales organization, Talladay concluded by suggesting that flying farmers who have ideas on the subject write a manufacturer displaying some interest.

Actually, it might not be necessary to start from "scratch." The job might well be done by a major farm machinery company making a deal with some company such as Ercoupe, Taylorcraft, Luscombe, or any of the smaller outfits who are presently doing little in the aircraft field. Engineering changes and refinements would, of course, be necessary; but that would not be too much of a problem, as there is no dearth of aviation brains. Big thing would be sales and service organizations already in being.

* * *

DEFINING FARM AIRSTRIPS

A special flying farmer windsock for their landing strips is in heavy demand. Thus far, no manufacturer has come forward with both a design and a price that would assure its success.

In the meantime, FF's are using varied methods of identifying their strips. Best yet is a heavy feeding of grass within the outlines of a great big FF.

By using a heavy fertilizer application, the letters FF can be made to stand out in bold contrast to the usual surrounding. Fertilizer should usually carry a high nitrogen content. FF's of Illinois and Indiana are presently working on a contest designed to secure better markings of FF strips. There are many cases on record of pilots finding sanctuary from bad weather when, like an answer to a prayer, they stumbled onto a well, defined farm strip. There would be many more such landings if all FF strips could be made to stand out.

Tuck Walker, secretary of Midwest FF's, in commenting on state maps showing farm strips, said in a recent speech, "Wonderful, but only half what is needed. After you find the strip on the map, you still have to pick it out from possibly a hundred green pastures."

* * *

WEATHER PROBLEMS

A fair weather medal should be awarded Flying Farmer F. Byron Smith of Morgan county, Ill. Just recently Smith and his wife found themselves grounded some 20 miles short of a Flying Farmer Fly-in to the Chanute (Ill.) Air Force Base. It was, Smith reports, the first time they have missed reaching their destination because of bad weather in more than 15 years of flying.

While Smith was grounded by a small band of bad weather that refused to move, 213 of his flying farmer friends were able to fly in VFR through the rain.

This incident lends emphasis to the tough job we hand to the weather man. There is just too much of a chance for weather to form between weather stations. The thinning out of these stations, now going on, means things are going to get worse.

And while we are on the subject of weather, we sometimes wonder if CAA radio people, generally, really want pilot reports.

A few weeks ago we called St. Louis when most of the horizon in front of us turned an inky black. "Rain showers," were the words that came back.

As we entered a torrent of darkness, five minutes later we knew better—there was lightning to our right, to our left, and straight ahead. Then came the rain blotting out what a VFR pilot must have—a view of the earth. We did a quick 180, and some minutes later called St. Louis radio to report the chain of thunderstorms. They acknowledged, but 20 minutes later they were still reporting light rain showers in an area actually having violent thunderstorms. They were wrong. Some 50 minutes later they said, "Pilot reports thunderstorms northwest of St. Louis." They were probably wrong again, as the thunderstorms had surely moved on.

The moral to this little story is: Pity the poor weather man, because he has a tough job. But why in the world doesn't he do the best possible with what he has at hand?

* * *

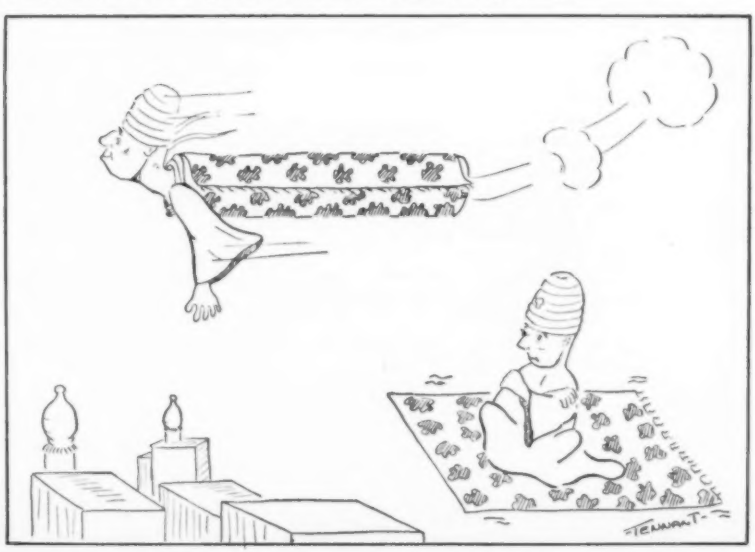
MOTHER'S DAY FLIGHTS

Giving someone's Mother her first airplane flight on Mother's Day is growing every year. Started some four years ago by flying farmers of Illinois, Indiana, and Wisconsin, the project got off to a slow start due to bad weather in all sections of the Midwest.

Skies that cleared just before sundown gave FF's a break, with more than 300 Mothers getting their initial airplane rides.

Despite the weather man's failure to smile on the event until '54, the idea refused to die. This year, blessed with good weather, it is estimated that more than 3,000 Mothers were carried aloft as a salute to all Mothers.

From reports gathered to date, Western Illinois FF's flew away with top honors. They gave flights to 167 Mothers, according to Mrs. Robert E. Bowles, secretary of that wing. Ten airplanes and twelve pilots participated, with about half of the flights originating on Flying Farmer strips and half on the Quincy, Ill., Municipal Airport. Growth of the idea, which is selling a lot of aviation, is illustrated by Mrs. Bowles, who adds that they carried only 38 Mothers a year ago.



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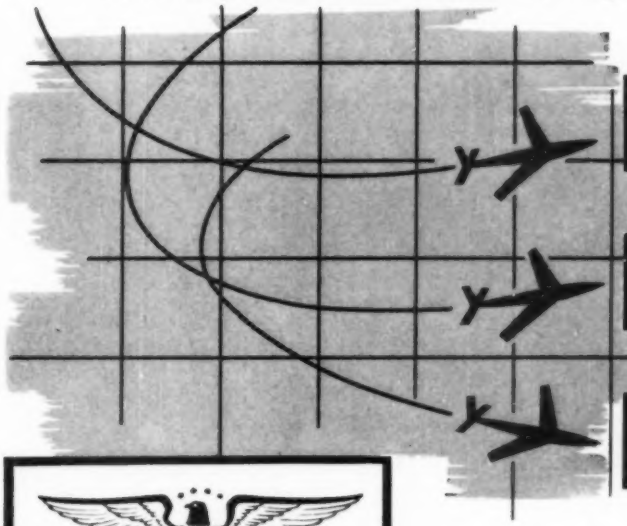

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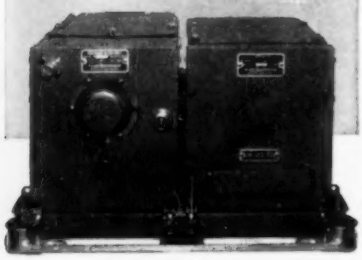

with ARC OMNI EQUIPMENT

ARC Type 15D VOR Receiving Equipment is four pounds lighter and has one less major unit than previous models. It fills the vital need for static-free communication and navigation facilities, and is ideal for dual omni installations on aircraft where simultaneous reception from two stations is a requisite, and where weight and space must be conserved.

With the 15D you can fly any track on the omni ranges, obtain a precise "fix" on two or more omni stations, make runway localizer approach, and receive weather and other voice signals on the same frequency that localizer or range signals are being received.

Receiver is tunable, covering entire band allocated to above services (108-135 MC).

The 15D equipment is sold and installed by ARC dealers, who will be pleased to quote you on a single or dual installation in your aircraft. The price of each 15D is $1,823.00 f.o.b. Boonton, N. J., plus installation charges. Write for technical bulletin and name of your nearest ARC dealer.

Dependable Airborne Electronic Equipment Since 1928

ARC Aircraft Radio Corp

BOONTON, NEW JERSEY

I learned about flying from that!

(Continued from page 43)

top. I was now at 42,000.

Several minutes later I had station passage. It was a relief to have a definite fix. I called Oceana, advised them of my position, and asked that GCA be alerted. I told them the situation and that I had to make a YG penetration. Norfolk approach control cleared me down to 20,000, keeping all YG quadrants centered. GCA had been alerted and was standing by to pick me up out of penetration turn.

In the meanwhile the weather at Oceana had gone down to GCA minimums. "You live only once." I thought to myself as I began my descent to 20,000. When I arrived there it became more and more apparent that aerology had mis-judged the weather. The soup on the way down thus far had been solid, and showed no sign of thinning out.

At 20,000, I was cleared to commence my penetration. As I turned towards Oceana at 6,000 feet, GCA came up on channel 18, and said they had me in radar contact. "Oh boy, I'm safe," flashed through my mind. If I had only known how wrong a guy can be.

"Navy jet 7253, this is Oceana GCA. We have you in radar contact six miles east of station in a right-hand descending turn. Continue penetration to 3,000 feet on a heading of 090 degrees," the calm, comforting voice of the GCA operator said. I repeated the transmission and complied.

"Navy jet 7253, turn right to a heading of 180 degrees." I again repeated and complied. "Navy jet 7253 check your gyro alignment and altitude. Advise please."

I checked my gyro and altimeter and found I was right on course and had the latest altimeter setting. I reported this, and they had me make several identifying turns.

"Is it me that's screwed up, or my instruments," I thought, never dreaming GCA could mess up. I began to wonder if I was even in the Norfolk area.

"Navy jet 7253 this is Oceana GCA. We had the wrong plane in contact. We now have you eight miles south at 3,000 feet. Turn right to a heading of 270 degrees, maintain 3,000 feet. Perform landing cockpit check, reduce to slow cruise. Check and align gyros. Do not reset for the remainder of the approach."

"Oh well, those boys are entitled to a mistake every now and then," I said to myself, as I turned on the final precision leg of the approach. But again I had opened my yap too soon.

"Navy jet 7253 descend to 800 feet and level off. Continue your present heading. You're on course and holding nicely. Descend to 600 feet. Turn to one-seven-three degrees."

At this point I knew I was making a PPI approach instead of a precision GCA approach. I had made PPI's before, but never with a GCA unit that was obviously not functioning properly. To be tooling along at an estimated 200 feet with a questionable GCA unit is not my idea of a Sunday school picnic. I expected to land the hard way any moment.

By this time, I was down to GCA minimums and the outside observer reported that he could hear me. I saw the faint glow of high intensity lights.

I eased over and broke clear at an indicated 100 feet. I was about half-way down the runway at 150 knots.

The visibility was reported ¼ mile so I had trouble keeping the field in sight during my 180 turn but somehow I managed to get the *Cougar* down.

I had three minutes of fuel left. On the final approach, I had made up my mind to go to altitude and pull the 'cord' if I missed the field.

Later as I talked to the GCA officer, I found that the Precision scope had gone out and the rest of the gear was acting up. He also told me that I had the dubious honor of making the first actual GCA approach to Oceana. I crave no more such honors.

What one mistake pyramided into a near catastrophe? The simple fact that I elected to fly in marginal conditions. END

FLYING CALENDAR

August 14—Air Show, Municipal Airport, Millville, N. J.

August 18—Missouri Pilots Association Flight to St. Louis for baseball game and barbecue.

August 19—State Fair Aviation Day at Sedalia, Mo.

August 22—Hector Flight Breakfast, Hector, Minn.

Sept. 4-5-6—National Aircraft Show, Cox Municipal Airport, Dayton, O.

Sept. 6—Brainerd Aviation Show, Brainerd, Minn.

Sept. 7-12—S.B.A.C. Flying Display and Exhibition, Farnborough Aerodrome, Hampshire, England.

Sept. 10-12—Flying Farmer Conference. Idaho Falls, Idaho, 4-states district.

Sept. 12—Idaho Air Breakfast, Idaho Falls, Idaho.

Sept. 16-18—National Plowing Contest near Olney, Ill. Landing facilities nearby. Contact: Flying Farmers, P.O. Box 6368, 42d St., Sta., Indianapolis 5, Ind.

Sept. 18-19—The Ninety-Nines Northwestern Sectional Meeting, Seattle, Wash.

Sept. 19-21—International N. W. Aviation Council, Vancouver, B. C.

Oct. 7—Farm Progress Show, near Camden, Ind. Landing facilities nearby. Contact: Flying Farmers, P. O. Box 6368, 42nd St. Sta., Indianapolis 5, Ind.

Oct. 17—Idaho Air Breakfast, Challis Venison Steak Fry with Sourdough Hotcakes and Choke-cherry syrup.

Nov.11-15—Wake Island Pilots Association Mid-Pacific Jamboree. Single engine aircraft. Free food and lodging. For further information, write Lou Bove, Secretary, WIPA.

Information for this column must be received at FLYING's editorial offices, 366 Madison Avenue, New York 17, N. Y., three months prior to the event.

BARGAIN FARES everywhere

Now everyone who travels can afford to fly TWA. Just compare the low cost by TWA Sky Tourist with the total cost by train or bus—including meals, pillows, tips and the many other incidentals so necessary during surface trips. You'll quickly discover it costs no more for the speed and convenience of air travel. And service is beyond compare—the same swift Constellations used on TWA de luxe flights, same million-mile crews, same ever-attentive hostesses. Next trip, join the millions who see the world and *save* with TWA—world leader in low-cost air travel!

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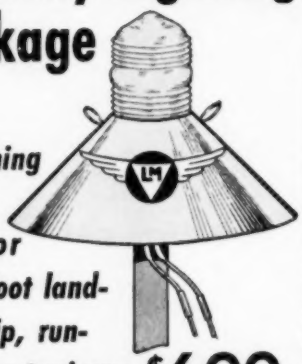

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Install it yourself. Just plow 6-inch furrows for cable, drive stakes for the units, hook up to regular 115-volt AC power. Needs no transformers. Lamps are 15 watt (105 lumens), giving 27 cp output.

This is a highly effective system, made by the makers of the famous Thermal Beam (TM) high-intensity lights for larger airports.

Also available: "Flying Farmer" kits for 2500- and 3000-foot runways. Mail coupon for complete information.

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Instrument Flight

(Continued from page 23)

Rule by itself, called THINK AHEAD. Suppose you have a radio call to make over a compulsory check point. You will have to radio in something like this: "Podunk Radio, this is N 7777 over Podunk, 08 at 10,000. IFR, destination Punkin Holler. Estimate Zeke's Corner at 58. Over." (Don't say, ". . . . over Podunk 8 minutes after the hour," because it sounds silly—the CAA Controller knows very well that 08 is past the hour. So for 12:08 p.m. say, "zero-eight" or for 4:58 a.m. say, "five-eight," etc.).

To do this well and efficiently, a private pilot must THINK AHEAD; he should write his message down before-hand and he should keep a Log as well. But writing a Log and flying an airplane on instruments is a two-man job yet it can be done by one man if that one man is competent. Private pilots can do it if they simply SCAN THE INSTRUMENTS *SYSTEMATICALLY*.

Pick up the chart board, write for three seconds, and *scan the panel*. Habit will move your eyes in a pattern across the panel, and the airplane won't take off on a cross-country trip of its own when you write or when you pick up the mike and call Podunk Radio. Write for five seconds and scan the panel, but no more than five. After a while, habit will become so assertive that you'll write, scan, write, scan, and do such a good job that it's fun. It simply isn't necessary to let the airplane start a dive-bombing run just because you're engrossed in using a pencil or talking over the radio! And this goes for contact flight as well as our instrument work.

The Big Payoff after using this Easy Rule is that a pilot's headwork improves. As stated above, almost anyone can be taught to fly smoothly and easily but there's no rule that can teach us to think. However, it's easier to think if part of the mind is working subconsciously, scanning the panel, and it's easier to cope with an ARTC (Air Route Traffic Control) instruction or an emergency if a well-formed habit is taking over the job of using basic technics and procedures.

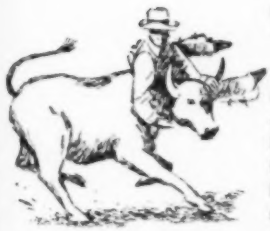
So all our Easy Rule is doing is to permit us to plan ahead, to think and to think clearly when a problem or an unforeseen emergency strikes. When it does come and if you have learned to SCAN THE INSTRUMENTS SYSTEMATICALLY, you can go ahead and think it out, all the while flying the airplane with the subconscious mind. Instrument work, more and more, is becoming a problem in headwork; whereas some years ago we took an applicant up to 5,000 feet and wrote him an instrument ticket on the basis of a simple orientation problem and a timed turn or two, we now, in addition, insist upon a flight plan, a take-off clearance, a holding problem, and a descent to minimums following a simulated emergency, such as a fire aboard.

The best pilots are those who not only can fly but can also think, and the ones who know an Easy Rule to help them are the ones who succeed. END

AIRBORNE MUSIC

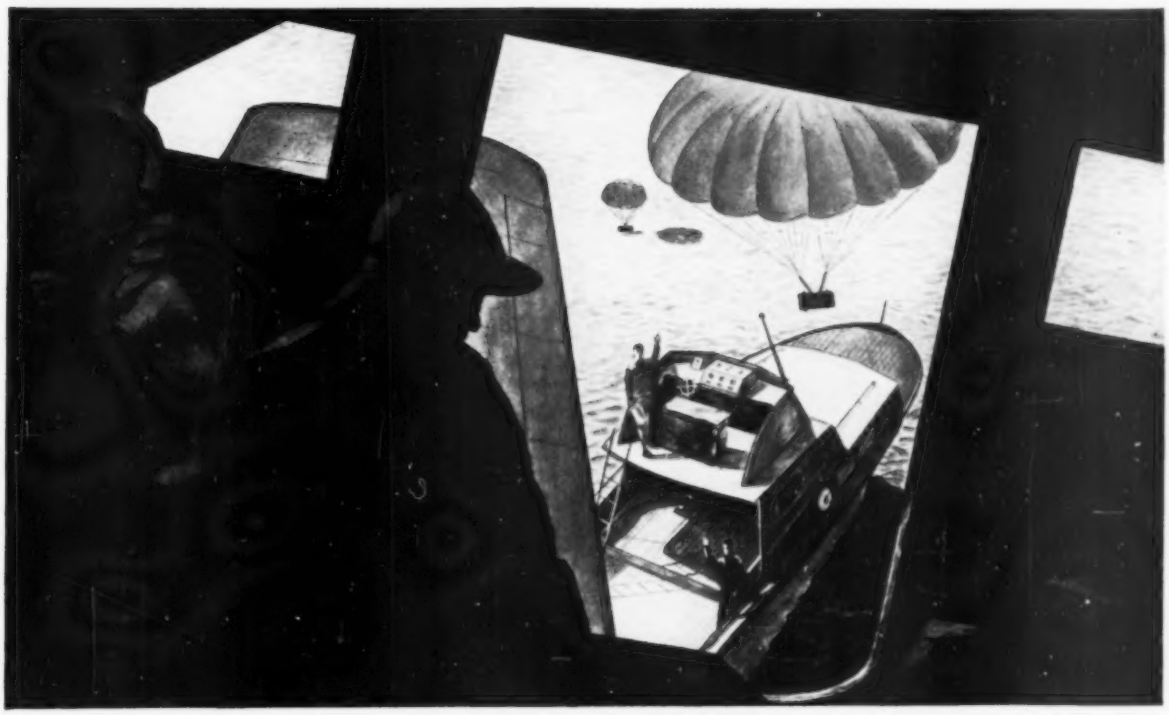
It was a tight squeeze but the Tom Clark Music Company managed to deliver a Hammond Spinet by Aero Commander to Goulding's Trading Post in the rugged country near Grand Junction, Colo.

PLANE FAX



Your Best Week-end Flight Plan for September

Fly to a week-end of riding, roping, and Old West celebration at one of the biggest Western rodeos, the Pendleton Round-Up, September 16 to 18. Land at the Pendleton, Oregon, Municipal Airport for quality Standard Aviation products and service.



Flying a rescue mission 260 miles at sea

Flying food to stranded fishermen! That was Jack Dowdle's job when a sport fishing boat was delayed by a storm and ran out of food and water at Guadalupe Island, 260 miles from San Diego. Just three hours after they radioed the Coast Guard for help, he was circling the boat, delivering supplies.

"Flying over open sea calls for top engine performance," says Jack Dowdle, whose Swift Air Service is based at San Diego's Lindbergh Field. "We always get dependable, full power with Chevron Aviation Gasoline 80/87. It gives us extra power when we need it, and ended the trouble we used to have with spark plug fouling in our Cessna T-50's.

"We've solved the problem of excessive engine wear, too, with RPM Aviation Oil. One engine has 1400 hours on it, with no valve or ring trouble! 'RPM' keeps our engines clean, and it ends pre-ignition and rough running."

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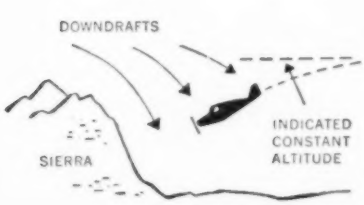
T.M.'S "RPM," "CHEVRON," REG. U.S. PAT. OFF.



TIP OF THE MONTH

When flying on the lee side of a mountain crest or ridge, remember that downdrafts will make your altimeter read "high". It's possible to be in a steady descent and still get "constant altitude" readings.

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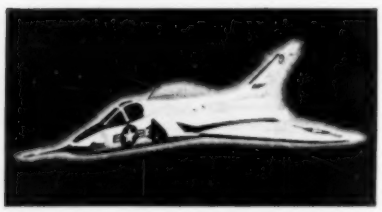

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Jungle Oil

(Continued from page 15)

porate air fleet; quite another to operate so that you haul ton-for-ton cheaper than barges or rail lines. How does Colpet do it?

First off, Hightower's ground personnel, mostly native Colombians, are highly trained freight handlers. Almost before props die, the cargo door is open, an awaiting truck backed into position—and freight hustled off. Seldom does a ship remain on the ground more than 15 minutes for loading—unloading upwards to 7,000 lbs. of cargo. Few Stateside air freighters come anywhere close to this efficiency.

"And," declares Hightower emphatically, "we aren't even operating an airline; we're drilling oil wells. That's our business."

While Colombia has what most Stateside pilots would call, "ideal flying weather," Colpet planes operate on instruments about 20 per cent of the time. Ironically, instruments are often flown when there's not a cloud in the sky. In dry season, Colombian farmers burn off their land, contributing a dense smoke condition. Some years the haze continues for three months. Then too, instruments are necessary on occasion to clear the cloud-covered 10,000 ft. mountains which hem in the Barco. As in most of South America, climate is vertical—humid tropics in the low lands, snow at 10,000 ft.

"We have temperature weather, not pressure weather," says Hightower. "Lots of turbulence over the mountains during dry season."

Colpet operates its own radio net, has five ground stations—at Cucuta, Tibu, Rio de Oro, Covenas and Barranquilla.

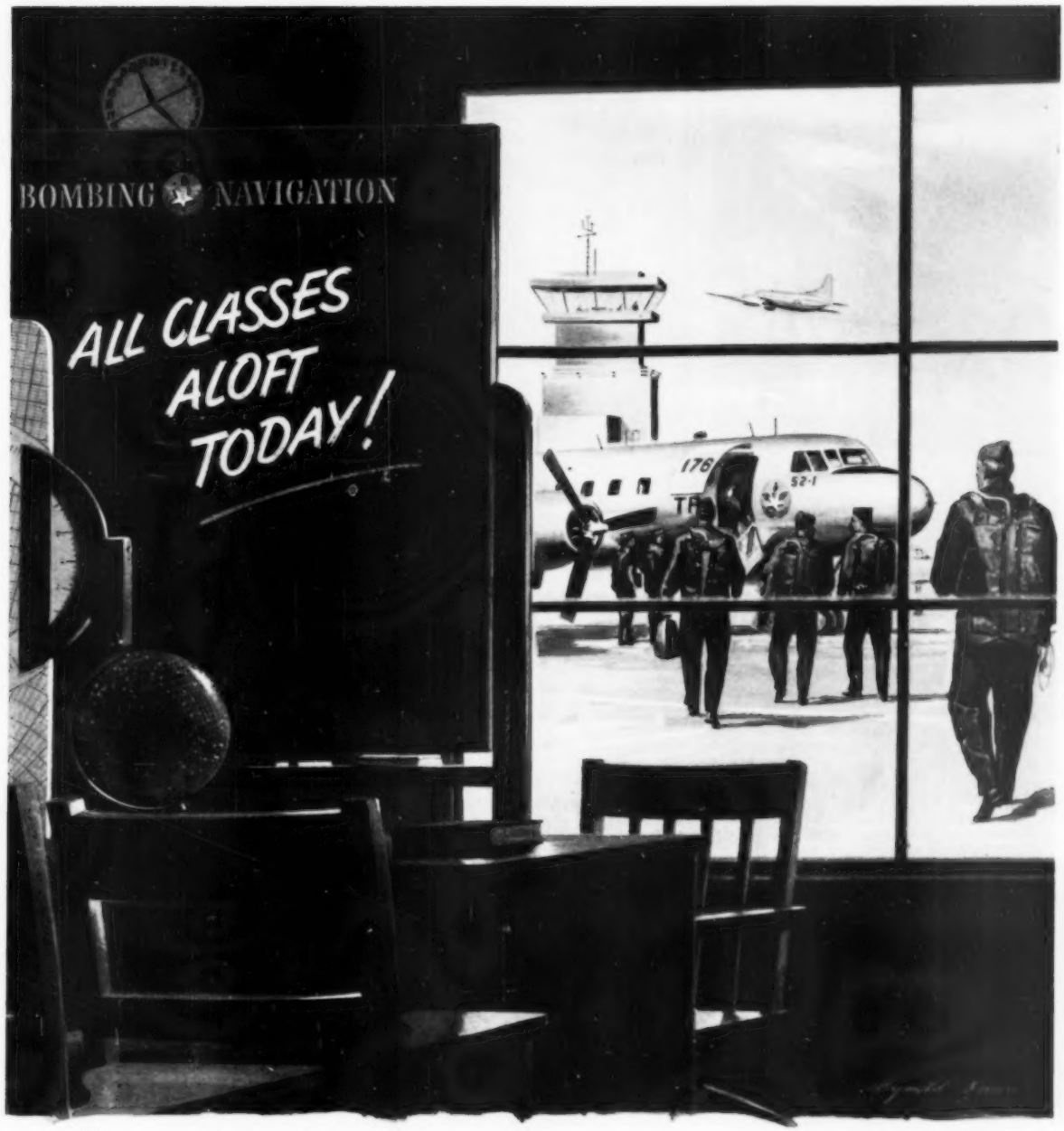
The Company began its Colombian air operations in 1933 with six Ford Tri-Motors, three Stinsons, a Sikorsky 139, two Lockheed 10's and a Junkers trimotor JU-52. This was during the heroic building of the Petrolea to Covenas pipeline, one of the most herculean jobs in petroleum construction history. Pipemen were constantly harassed by Motilones who challenged every foot of the way. A Colombian Army battalion, guarding pipeliners, lost 20 men to Motilon arrows, including its commanding officer; 90 pipeline workers were wounded, ten fatally.

But if it had not been for Bill Hightower's airplanes, the pipeline would never have been built and the Motilones would still be holding their jungles from the progress of civilization. END

CUMULATIVE SAFETY

Trans World Airlines led a list of 39 U. S. airlines for cumulative mileage without a fatality, to receive its 1953 National Safety Council award. TWA's 8,005,182,000 safe passenger miles is over two billion more than any other line and equivalent to flying the entire population of Philadelphia to Paris, France.

"Think we ought to tell the CAA? It's only circumstantial evidence, really."



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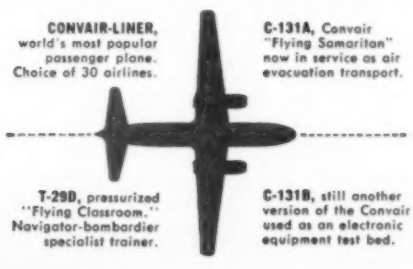

T-29D, pressurized "Flying Classroom." Navigator-bombardier specialist trainer.

C-131B, still another version of the Convair used as an electronic equipment test bed.

United States Air Force Air Observer Cadets are getting a big lift from Convair's famous T-29 "Flying Classrooms." These multi-place military aircrew trainers are helping to teach the ABC's of air power where it counts the most . . . aloft!

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TIMETABLE

The new book, "The Next Fifty Years of Flight," as visualized by Bernt Balchen, noted pilot and arctic explorer, contains the following "timetable" of aviation development:

1955: NACA research rocket plane clocked at four times sonic speed

1960: Britain builds faster-than-sound airliner

1965: Pan American superjet breaks record on New York-London run: 3 hours 15 minutes

1970: American guided rocket lands on the moon

1975: United Airlines begins four-hour non-stop service between New York and Honolulu

1980: American scientists land on the moon

1985: Helicopter breaks through sound barrier

1990: Flying Tiger-Slick Airlines commence air freight service with non-piloted guided planes

1995: Air Force bomber flies non-stop around the world in three hours

2000: TWA breaks record New York to Tokyo over North Pole: 1 hour 50 minutes

2005: Space ship landed safely on Mars

Ad Astra Per Ardua

(Continued from page 35)

headed for the nearest northbound track and resigned myself to fate. First stop was Athens, where I thought the colored gas boy would pop his eyeballs as he kept looking at the C-3 and mumbling, "Nevah in mah whole life did ah see such a airplane as that." We put fluid in the compass in hopes that would fix it. It just slowed down the spinning a little . . . now I could read the numbers as they dashed by. Big deal.

Thirty minutes out of Athens, one cylinder started missing so I put in at Greenville. The mechanics there worked on the engine all morning and couldn't find anything wrong. I decided to keep going. The carburetor had started leaking gas down behind the exhaust, which created a fire hazard, so we sawed the stacks off and turned them around. They stuck straight up in the air like a pair of horns. "The Thing" sounded worse than ever now since each cylinder could be heard separately. Also the carburetor heater didn't work too well now since it was connected to the piece of amputated pipe that I threw in the baggage compartment.

Again I took off and headed north, but was hardly out of sight of Greenville before the engine started missing and cutting out worse than ever. Since I was near Spartanburg airport, I cut the throttle and spiralled to a landing. My nerves couldn't stand much more of this foolishness, not to mention the beating my judgment was taking, so I tied the ship

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down, mumbled at it and made for the bus station. Then my pride started acting up . . . the sensible side of me said, "Go home, young man," while the other side said, "try to get it fixed just once more." Naturally, the sensible side lost. I got up and walked out of the bus depot.

Next day we were on the field at the crack of dawn. The mechanics spent the morning grinding valves . . . that would fix it for sure, they said. Around one o'clock we were ready to try it out. I got in, a mechanic spun the prop, and, you guessed it . . . bad as ever. I could have tossed a match under the works and sat there happily while it burned. But now I was so determined to get that clunker home that I would have considered pushing it the rest of the way. I climbed aboard and took off with their assurances that the engine wouldn't quit entirely . . . at least they didn't *think* it would.

As darkness approached, I found myself vibrating north in the general vicinity of Greensboro, so headed for a small field at nearby Gibsonville and made a landing in order to stay away from the busy municipal airport. However there weren't any rooms available in town, so decided to hop to another field a few miles further along. One of the fellows spun the prop for me, then another and another, but no soap. Finally, everybody was arm weary. That was the last straw. I stomped off to the bus station. This time I got on the bus and went home. There at Gibsonville sat the "Thing" for the next two months.

Finally, the owner got around to borrowing some parts he figured would fix the engine. We loaded everything in a Taylorcraft and once again were off. When we arrived at Gibsonville, Ernie, the fellow who had bought the C-3, tinkered around a bit and announced that it would run, and darned if it didn't. After a test hop we were on our way. It was decided that I should navigate in the Taylorcraft while Ernie concentrated flying the C-3 . . . the windshield had become so discolored that you couldn't even see the gas gauge, let alone navigate.

The first day was uneventful except that, after taking off from Gibsonville, we thrashed around for ten minutes locating each other in the air. The first stop was at Lynchburg, Va., and, due to the leaking carburetor, we had to put eight gallons of gas in the tank. Seeing as how the tank only had a capacity of eight gallons, that was cutting it pretty fine. But Ernie wasn't worried . . . as I said, he couldn't see the gas gauge anyway. The mechanic at Gibsonville had put too much oil in the tank and by the time we got to Lynchburg "it" was covered with oil from stem to stern and dripping all over. The next stop was Waynesboro, where we spent the night.

Everything had gone so smoothly the preceding day that we were prepared for the worst as we started out. Our preparing wasn't in vain. Out of Waynesboro, the right cylinder acted up again, so Ernie decided to land at Front Royal instead of Winchester as planned. A C-3 has a fairly flat glide and, not being too

(Continued on page 58)

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AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is "To make flying more useful, less expensive, safer and more fun."

Headquarters address is Box 5960, Washington 14, D.C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

IFR CONCEPT CHANGE?

AOPA's efforts to bring about a revision of CAA's criteria for determining where economy cuts of Federal airways facilities should be made and how navigation and communications facilities of the future will be planned appear to be making headway.

CAA is reevaluating the airways use criteria as a result of AOPA's repeated contentions that they are highly discriminatory in favor of the airlines.

CAA officials assigned to the project have conferred with AOPA National Headquarters staff members to find out how AOPA members and other non-airline civilian pilots utilize the Federal facilities and what they need for flying the airways VFR.

A complete revision of CAA's viewpoint could come from the study. If CAA modifies its present IFR concept in favor of the VFR concept, which AOPA has long insisted is the only realistic one, it could mean an entirely new understanding of civil aviation in the United States.

As an immediate result of the hoped-for CAA swing to the VFR concept, there was a strong possibility that most of the 37 INSACS scheduled for decommissioning on July 1, 1954 would be retained indefinitely.

The far-reaching results of a changed CAA approach to the problem could alter drastically all future airways planning.

An AOPA spokesman commented, "If this change of concept comes about, and we have reason to hope that it will, AOPA will have helped win one of the most far-reaching victories in this country's aviation history.

"For the first time, the non-airline civil pilots' interests and needs, under all conditions, would play an important part in the building and operation of the Federal airways system. Each pilot would then get full value for his tax dollar, as do the users of all other transportation forms.

"That's the way it should be."

HIGH DENSITY CONTROL ZONE

Following strong AOPA objections and comments from all sections of the country, the proposed High Density Control Zone for the Washington, D.C. area is being studied carefully by the Civil Aeronautics Board.

The proposal is a pet project of the airlines and Government air traffic control officials. They have been trying for years to get legislation that would restrict civilian, non-air carrier flying in busy metropolitan areas. This most recent plan, which is supposed to be a solution to the near-miss and mid-air collision problems, will restrict flying in controlled areas, even in good weather.

AOPA has formally asked for a public hearing on the matter, contending that the solution to the problems is not a wholesale banning of large numbers of airplanes from the places that plane owners must visit most often.

AOPA believes that the problems are created by pilot carelessness, and continues to call this fact to the Government's attention.

The Washington HDCZ, the first of many such zones planned for other large cities throughout the United States, will become law, unless it is strongly opposed by pilots everywhere.

AUTOMATIC WEATHER

As the result of an AOPA suggestion, a new experimental automatic telephone aviation weather service was inaugurated June 15 in the Washington, D.C. area. Conceived by AOPA, it was planned and put into operation by the U. S. Weather Bureau and the Chesapeake and Potomac Telephone Company.

Special automatic telephone equipment with a maximum of five trunks started operating this summer at the Weather Bureau's main aviation center at Washington National Airport.

Weather Bureau personnel make voice recordings on the equipment, giving up-to-the-minute weather reports, advisories, forecasts, and summaries. The information is revised as often as necessary.

Pilots need only to call the service's special number, District 7-4950, to hear the complete, detailed, two-minute recording.

Information includes existing and forecast weather for the Washington terminal area, a synopsis of critical weather on airways between Washington and New York, Washington and Pittsburgh, Washington and Nashville, and Washington and Raleigh-Durham. This grouping is purely experimental and is subject to changes and suggestions sent in by pilots.

Using two trunk lines for the initial months of the experiment, the service is designed so that a call coming into a busy recorder will automatically switch to the second recorder. If both are busy, the pilot gets the customary busy signal.

The number of busy signals is counted by an automatic device. If they reach a substantial volume, one or more of the additional three standby trunks will be added to the service.

Actual success or failure of the experiment will depend on comments from users, and of course upon the frequency of its use by pilots.

Pilots who use the service are encouraged to at least drop a postcard with comments to the Weather Bureau or to AOPA National Headquarters.

Whether or not a similar system is adopted elsewhere in the country will depend to a great extent on how the Washington installation works out.

FEE DROPPED

Officials at Lunken Airport, Cincinnati, O., recently devised a plan for charging landing fees for all planes, including those privately owned, using the field.

AOPA wrote the Cincinnati public utilities director and pointed out how landing fees for private planes would result in reduced use of the field and a decrease rather than an increase in the field's incoming revenue.

After considering AOPA's comments and protests from private pilots in the area, the Cincinnati City Council decided to drop the proposal. They recently advised AOPA of their actions.

AOPA AT WORK

An AOPA member from Glendora, Calif. was enroute to Philadelphia, Pa. He was a hopeful entrant in the Philadelphia Junior Chamber of Commerce's Transcontinental Air Cruise, scheduled to start June 5.

At noon, June 4, Henry Hansen (AOPA A85650) was 3½ hours west of Washington, D. C. in his Cessna 170, when he discovered that after flying all the way east, he was going to be ineligible to enter the race for lack of a valid FCC license on his plane's radio transmitter.

What to do? Call AOPA, of course.

After talking to Mr. Hansen long distance, AOPA's Service Department went into action. At first FCC advised that it would be practically impossible to get the needed license before the offices closed for the weedend at 5 p.m. However, through the efforts of sympathetic FCC personnel, arrangements were made to obtain a temporary authorization within half an hour, provided Mr. Hansen made his ETA at Washington and could be in their office by 4:30 p.m.

In spite of some doubtful weather, the AOPA'er made it by 3:50 p.m. He hurried downtown to the FCC office by cab.

At 4:50 p.m., with the proper papers in his pocket, Mr. Hansen and his traveling companion were off for a hurried view of the capital city from atop the Washington Monument before taking off for Philadelphia to join the air cruise back to California.

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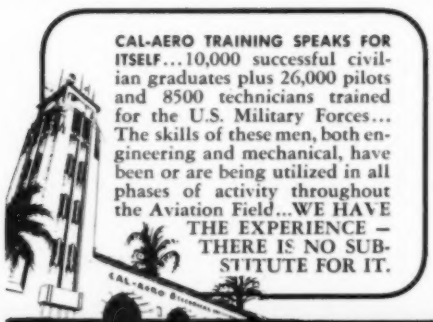

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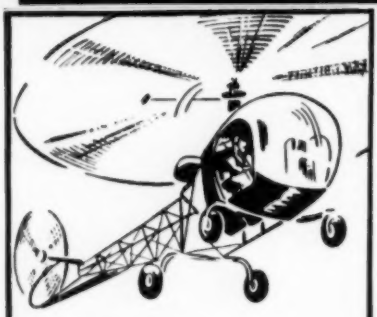

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(Continued from page 55)

familiar with the ship, Ernie came in a shade high and fast and went floating along the runway from one end of the field to the other. From here on, the situation, as they say, deteriorated rapidly. In fact, it went completely to pot. About a hundred feet from the end of the runway Ernie decided he was going to overshoot . . . a noble decision . . . so poured on the coal to go around again. Just then the right cylinder blew a valve and gave up the ghost entirely. The airplane wobbled out across the wires at the end of the runway.

Instead of landing straight ahead in a field, Ernie tried to turn back on one cylinder. He might possibly have made it too, except that, just as he was passing over the wires on his turn back, the side window blew open and knocked his glasses off! Without them, he was blind as a bat. Afraid of hitting the wires, he held the nose up a little too much and stalled out. Just as the left wing started down into a spin, he hit the ground, cartwheeling from the left wing-tip to the gear and nose, then to the right wing-tip, finally sliding along in a cloud of dirt, flying rocks, wheels and propeller splinters. Ernie crawled out only slightly the worse for wear.

But was that the end of "the Thing?" Huh!

Two weeks later, Ernie's brother, Art, and I loaded an Aeronca *Defender* with engine parts, landing gear, propeller, tool box and so forth and, with Art at the controls, staggered into the air. There was a little ground fog as we left Johnstown but the airport told us it was just local and we'd be past it as soon as we got across the mountain. So, we two trusting souls headed out across the top of it and an hour and ten minutes went by before we came to even a hole in the solid layer of clouds below. For some unknown reason the gas tank was nearly dry at this time so we spiralled down and flopped into a genuine West Virginia cow pasture complete with cows and rocks. We got gas from a service station on a nearby highway and returned to find the cows deriving no end of pleasure from licking the dope off the ship. Zigzagging around cows and rocks we galloped into the air again.

Arriving at the airport where "it" was parked, we spent the remainder of the day replacing gear, prop, carburetor and sundry items that had come loose in the previous "landing." We couldn't do much at the time about fixing the cowling and wing-tips, so we left the tips bent up about a foot. Neither did we patch a big hole in the belly right between the seat and rudder pedals. A fine view of the ground could be had by merely leaning forward a little and looking down. We cranked the engine for an hour without getting it to run, then, as we were short on daylight, left it there and flew on home, arriving just at dark after some sizzling moments with thunderstorms in the mountains.

Several weeks later we made another assault on getting the "bathtub" home. This trip we took the timing manual

(Continued on page 60)

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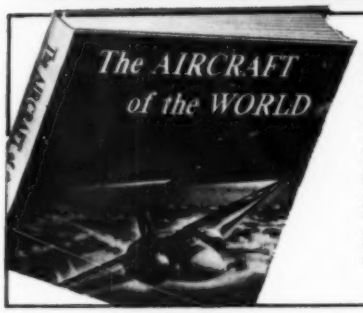

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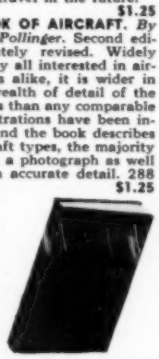

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WEEMS SYSTEM OF NAVIGATION
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(Continued from page 58)

along and soon had the C-3's engine purring like a . . well anyway, it ran. When we finally got everything ready, the airport manager wasn't in favor of our flying the plane out—in fact he offered to truck it home for us to avoid causing any more unfavorable publicity for his airport. We thanked him kindly but told him our confidence in "it" was unshakable. Probably the fact that he had to come out and un-pry the thing from a fence at the end of the runway where I became cornered trying to get turned around didn't help his peace of mind. But once I got all the pieces aimed in the general direction of take-off, I fooled them all and got away in good shape.

The rest of the trip was uneventful, except for the usual automatic sweating with an engine you don't trust. Everytime we'd cross a ridge I swear the thing would start getting rough but over open valleys it would run perfectly. By this time I was an expert on psychological effects. We arrived triumphantly home with all necessary parts hanging together. The general greeting of our welcoming committee was, "We see it, but we don't believe it."

Needless to say, after fooling with "the Thing" for months and trying to fly it a mere 600 miles, I was sick of the sight of it. However, a few weeks went by and one day the owner caught me in a moment of mental weakness. When I came to, I was proud half-owner of the world's saddest sack.

But now after many weeks of rebuilding, repairing, painting, and general slaving, we have a real good-looking little airplane, despite its peculiar shape. We are putting in plenty of enjoyable hours puttering around the vicinity of the airport. All's well that ends well! END

Canted Deck

(Continued from page 29)

them.

All this is different on the canted deck. Here, because of the offset landing platform, barriers are not necessary. Landing aircraft disengage their tail hooks from the arresting wires and taxi up to the forward third of the flight deck completely clear of the landing area. In an emergency, when a landing aircraft is unable to engage its tail hook in the arresting wires, a barricade can be erected to stop it. To be sure, that is a rough way but it is better than losing both plane and pilot to the sea.

The technique of landing on the canted deck differs considerably from that on a standard one. On the standard carrier when the LSO (Landing Signal Officer) orders the pilot to cut, he immediately reduces all power and settles heavily to the deck where the tail hook engages an arresting wire. On the canted deck, the pilot flies his plane at 85 per cent power while in the landing pattern and after the LSO gives him the cut. He literally flies it into the arresting gear and he does not reduce power until the tail hook catches a wire.

To better understand it, put yourself in the pilot's seat for those last exacting seconds of the landing approach. Your eyes are fixed on the LSO. Your every thought, every move must be precise. You can't be too high, too low, too much to the left or right, too fast, or too slow. Your jet is moving at 120 knots towards that little landing area bobbing in the sea. Everything must be just right. The LSO signals, "Cut!"

Immediately, you nose your jet over, skim inches above the deck and wait for the tail hook to engage a wire. But for some reason the hook fails to make contact. Do you sit there frozen with fear as the barriers and vague outlines of

(Continued on page 62)

THE WINNER!

Walter C. Butler of Phoenix, Ariz., was the winner of the Second Annual Jaycee Transcontinental Air Cruise from Philadelphia, Pa., to Desert Air Park, Palm Springs, Calif. He is greeted here by John Neal, chairman of the race committee. Butler's co-pilot was E. T. Burson, also of Phoenix.

Second place went to William N. Hinselman of Winner, S. D. Third place was won by Dick Odabasham of Cashmere, Wash. And fourth went to Faye Douthitt of El Centro, Calif.

Fifty-five aircraft completed the race. Among the contestants was Robert Perew of Suffield, Conn., who learned to fly after discussing last year's cruise with one of the participants, obtained his private license and flew in this year's event.

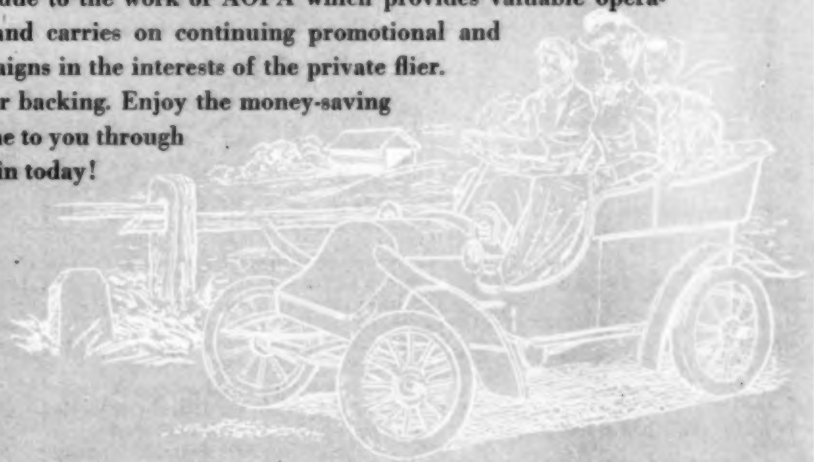
Another entry of note was Jack Spear of Tipton, Iowa, a polio victim paralyzed from the waist.

And just to show it can be done with ease, Louis Glickman of Hammonton, N. J., a double amputee veteran of World War II.

So you think you've got it bad!

IN THE halcyon days of the early 1900's a trip by auto was an adventure almost comparable to a safari through Uganda. It meant punctures, blow-outs, motor failures, getting lost on country trails and bog-downs in muddy ruts. But through the efforts and pressure of groups like AAA, which provided intelligent support for motorists' interests, travel by car has become the easy thing it is today.

Civil Aviation is much farther ahead than motor travel in its first mass participation period, although it still has far to go. Airport service, weather service and other important needs of the pilot have been greatly improved. Today the U. S. civilian pilot can travel with ease and safety far beyond the expectations of the aircraft-minded of 15 years ago. A large part of this advancement is due to the work of AOPA which provides valuable operational services and carries on continuing promotional and legislative campaigns in the interests of the private flier. Give AOPA your backing. Enjoy the money-saving benefits that come to you through membership. Join today!



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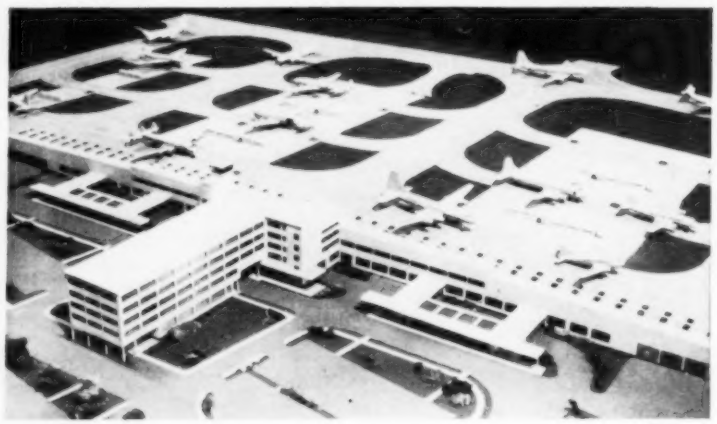

AUSSIES' ANSWER TO JETS

Model airport designed by the Australian Department of Civil Aviation as an answer to the problem of protecting airline users from the scream and blast of jets. Radical features are underground facilities with elevators to convey passengers from the airline lounge at road level up to the loading aprons. Subways will lead to elevators serving more distant plane positions. Designed primarily for a domestic airport, it is being adapted for an international airport by provisions for customs and immigration services. Left: Cutaway of the model jet airport showing plane held by chocks on elevated apron with retractable passenger elevator raised to aircraft door position.

(Continued from page 60)

parked aircraft loom in your face? No, you merely fly on off the ship, join the landing circle and come on in for another try!

The unobstructed landing area of the canted deck, with the hazards of barrier crashes eliminated is a real boon to carrier pilots. They find themselves landing with a feeling of relaxation and confidence hitherto impossible.

Canted deck landings permit a low rate of descent and easy contact with the deck. This means a great reduction in the landing loads imposed on the aircraft contrasted with those encountered during a normal carrier landing or "precision crash." as it is jokingly called. This is extremely important to the future of Naval Aviation. It means that aircraft operating from carriers like the *Antietam* can shed the handicapping extra weight required to "beef up" the plane structure in order to withstand the tremendous landing shock. The resulting reduction in dead weight will see a proportionate increase in carrier plane performance and efficiency.

During evaluation tests hundreds of landings and take-offs have been made by different types of Navy planes, both jets and conventional. As operations progressed without serious mishap, even the most skeptical pilots enthusiastically agreed that canted deck landings were the finest they ever experienced aboard ship. But what would happen if, after engaging an arresting wire, the tail hook or wire broke? Without the barriers, it appeared that the plane would continue on over the side and into the sea. Such contingencies seemed the worst that could possibly befall a pilot during a canted deck landing. And they did happen.

On one jet the tail hook broke, but the pilot flew the plane on off the deck without further incident. Fortunately, the ship was not far out to sea and the pilot landed at a Navy airfield instead of having to crash land into the barricade. Another jet settled on the deck with its hook in the wire, but the arresting wire broke. When the tensed cable parted, it whipped back down the deck with a force capable of cutting a man in half. Fortunately, it expended its rampant fury harmlessly. The jet, in the meantime, continued on off the ship, joined the landing pattern and landed on the next attempt.

One of the closest calls came when a pilot, feeling his plane settle to the deck, thought that his hook had engaged a wire, and reduced power. As his plane continued to race towards the end of the flight deck, he suddenly realized what had happened. Immediately, he slammed the throttle wide open and the jet shot off the end of the flight deck and settled out of sight. Onlookers believed he had crashed into the sea. But, during the split instant that the plane dropped over the ship's side, the pilot reached down and retracted his landing gear. That saved him. As the wheels came up, the jet staggered just over the tops of the waves and then rapidly

(Continued on page 64)

Briefings . . .

(Continued from page 44)

complete inventory, have been sold by Lockheed Aircraft Service to Link Aeronautical Corp., Endicott, N. Y. Conversion provides installation of Lycoming 260-hp engines.

HIGH-SPEED PAINT which will not peel off in flight near the speed of sound is being developed by Cellon, a British company, for the latest jet fighters and bombers.

PERFORMANCE TESTS on the *Learstar* indicate that it is the world's fastest twin-engine transport, according to William P. Lear. Although top speed at optimum altitude has not yet been determined, true air speed at 17,700 is 312 mph with 20,500 gross weight and 785 hp per engine. This is high blower, maximum recommended cruise power.

DRIVE-IN TICKET OFFICE has been opened by American Airlines at Syracuse, N. Y., in cooperation with the Merchants National Bank & Trust Company. There

are four drive-in windows manned by bank tellers. An American ticket agent is on hand to take over when an AA customer arrives for ticketing. Saves time, and parking problems are eliminated.

THIRD IN A SERIES of aviation education booklets produced for students by the National Aviation Education Council is entitled: "Helicopters." As with "Look to the Sky" and "Jets," first two in the series, "Helicopters" was prepared by classroom teachers. Single copies are 50c each, discounts for larger orders. Contact NAEC Materials of Instruction Committee, 1115 17th Street, N.W., Washington 6, D. C.

HOUR-LONG PROGRAMS over a local broadcasting station of symphonic music coupled with a high level commentary on all phases of aviation have proved highly successful boosters for Lynch Flying Service, Bozeman, Mont.

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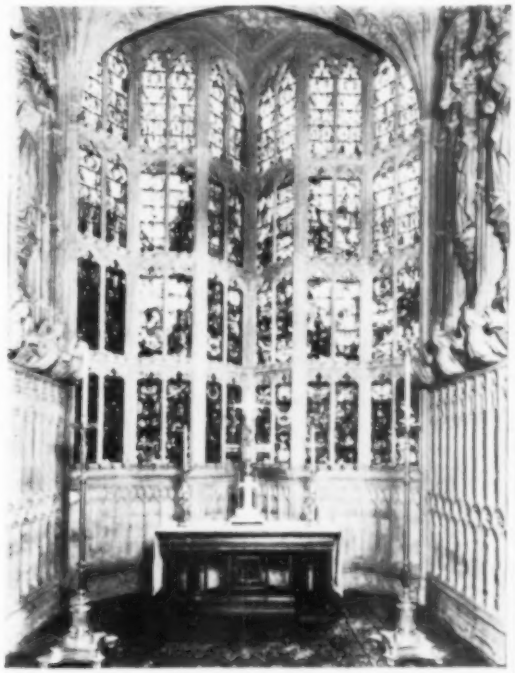
(Continued on page 70)

Memorial Window

By LEN MORGAN



WESTMINSTER ABBEY is about the last place an air-minded visitor in London would go looking for something with an aeronautical flavor. Yet here, within the famous walls of Britain's most hallowed spot, is a strange and beautiful memorial to a handful of men who died in the air. It is the Battle of Britain Memorial which pays lasting tribute to the pilots and crew members who fell in that short, blazing chapter of air combat history.

The Memorial was unveiled by King George VI on July 10, 1947, the seventh anniversary of the battle's first day. It may be found in the extreme east end of the Abbey, in a small alcove now known as the Royal Air Force Chapel. The Chapel itself was built between 1503 and 1519 and once contained the vault of Oliver Cromwell.

The idea of such a memorial was suggested by a stained glass window in ancient Gloucester Cathedral which recalls the Battle of Crecy in 1346 and commemorates the sacrifice of the Knights who fought it. The proposal that England's latest heroes be similarly recognized was so enthusiastically received that it was decided to include a chapel in the project. Over $300,000 poured in when an appeal was made for funds to pay for expensive alterations.

The most striking feature is the stained glass window extending the entire width of the Chapel. Composed of 48 panes, it displays the insignia of the 61 squadrons that saw action between July 10 and October 31 of 1940, and 16 weeks during which the battle is officially considered to have been waged.

Every emblem is faithfully reproduced; the coiled snake of No. 66 Squadron, the moose head of 242, No. 74's snarling tiger, the bellowing elephant of 249. Here also is the heavy numeral "1" of famed No. 1 Squadron of London, the twin badges of the all-Polish outfits and the bucking ram of Canadian 401. The center panels show the flags of Canada, Australia, New Zealand, South Africa, Poland, Belgium and the United States.

On the same day, Field-Marshall Viscount Montgomery and Major General F. Griswold, Commanding General of the Third Air Force, USAF, unveiled three stained glass windows in Chelmsford Cathedral. The windows, together with an elaborately-carved oak door, form the Essex Memorial, dedicated to the American airmen stationed in Essex during the war and in remembrance of the friendship between them and the people who lived near their wartime bases. The Great Seal of the United States and the USAF crest are prominently displayed in the three high panes of the handmade glass.

And so have the brave deeds of Britain's defenders been perpetuated by a grateful nation which was neither too concerned with the hardships of the present nor too worried by the terrible possibilities of the future to erect, with solemn ceremony, monuments to heroism of the past.

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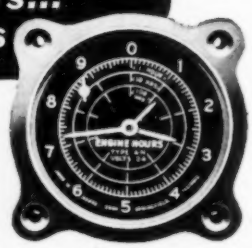

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2068 YALE BLVD. SPRINGFIELD, ILLINOIS

(Continued from page 62)

gained altitude. On the USS *Antietam's* canted deck Navy pilots have tried about everything conceivable to prove its value and utility. Jets and propeller driven aircraft demonstrated "touch and go" landings, and arrested landings during daylight and at night. They even landed while jets were turning up on the forward catapults. For the first time in Naval Aviation history, simultaneous take-off operations were conducted with jets being launched from the catapults while propeller jobs took off from the canted deck. All of this was done with winds varying from 26 to 42 knots over the flight deck and varying in direction from 10° to starboard to 20° port. The lack of a major accident to mar these operations, in spite of the inexperience of the personnel concerned, is a high tribute to the increased safety inherent in the canted deck.

In proving the tremendous advantages of canted deck carries over conventional types, the USS *Antietam* thus emerges as a milestone in Naval Aviation History. END

Capital's Big Step

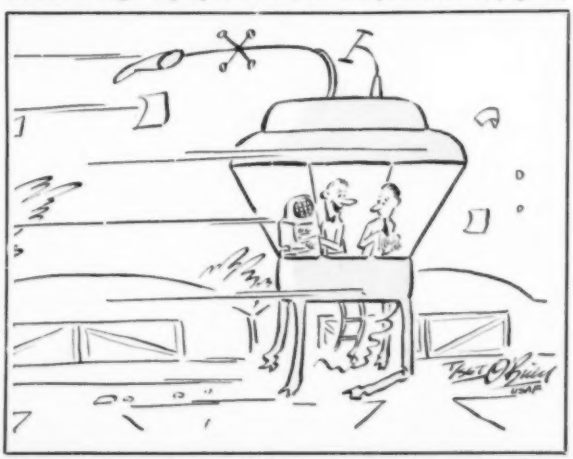
(Continued from page 22)

is around 335 mph, with range and payload depending on operational requirements.

Capital Airlines, which has option on 37 additional Model-700-D *Viscounts*, is basically a short-haul operator working some 5,500 miles of airways criss-crossing the eastern half of the country, and in competition with members of the big four on 80 per cent of its route structure. The airline, once economically floundering, returned more recently to stability by introduction of "coach" service on its routes. J. H. Carmichael, president of the line, points out that the *Viscount* will benefit his line competitively with the big carriers and still permit service to most smaller communities on his route system.

It is claimed the *Viscount* with a 48-seat conformation can break even with a 50.6 per cent load factor. This figure will be carefully watched as the plane goes into service on U. S. airways, since the break-even point on commercial aircraft is one of the most critical elements of air transportation. Even in amortization of the original purchase price, in this case around 45 million, a very slight shift in the break-even load factor is of vital importance. It can be cited that in Europe the *Viscount* had passenger attraction enough to boost BEA's traffic share from 28 to 49.2 per cent on competitive routes.

Additional to the economics of the *Viscount*, a focal point of American interest will be the turbo-prop engines. This type, not merely an intermediary step between piston and turbine types, as is sometimes suggested, offers certain basic advantages over pure jets in commercial traffic. It can reach peak efficiency at lower altitudes and so be used on shorter runways. It gives faster take-off, and climb as well as greater maneuverability. Due to absence of reciprocating parts, the turbo-prop avoids the vibration of the piston engine, although it creates thrust through a propeller as does the *(Continued on page 66)*



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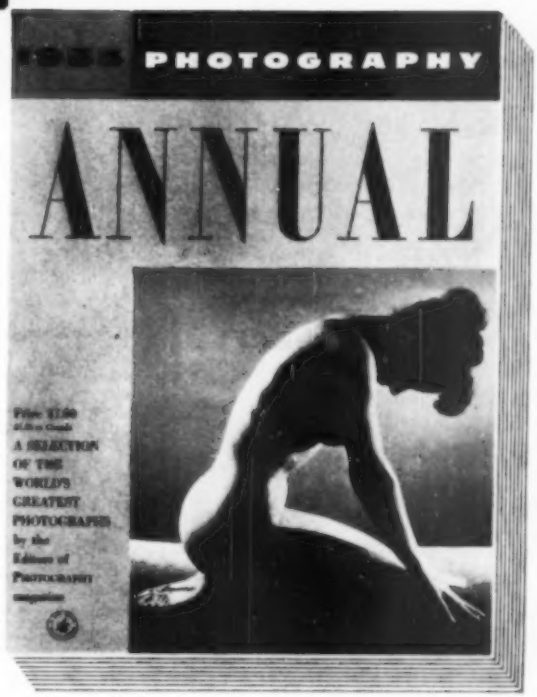

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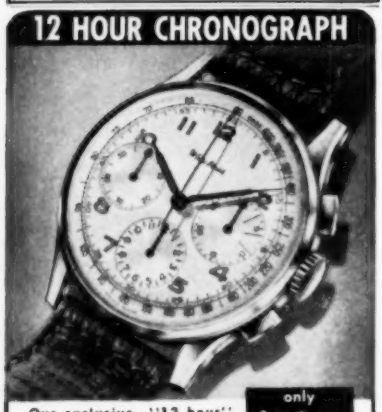

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(Continued from page 64)

piston type.

Air enters an intake at the front of the *Dart*, passes through two compressors, is mixed with fuel and burned in one of seven chambers. The energy created expands through blades which rotate the turbine. This rotation is transmitted through speed reduction gears to the propeller. Whereas there is a small amount of exhaust thrust, the main source of power is derived from the prop.

That penetration of the American market is of great importance to the British is indicated by the fact that BEA surrendered its priority on the three ships bought by Capital, and that Vickers has promised the full 37 optioned aircraft no later than 1957. A CAA certification team is now in England to study the *Viscount* for eligibility to American registry.

Arrangements have been made for Vickers initially to train a number of Capital maintenance and flight crews, who, in turn, will train their confreres on the airline. Vickers reputedly will establish a spare parts inventory here and ultimately Capital will establish its own engine and plane overhaul in Washington. If the *Viscount* proves all-in-all to the airline, the advantage of a single type in maintenance cost and operational utility will be considerable.

One notable foreshadow of the *Viscount* is its reputation for fine pressurization, permitting fast climb and descent without passenger discomfort. The passenger also benefits immeasurably from the extremely low noise level. Instrumentation, along with navigational and radio equipment will be of U.S. manufacture.

Capital will originally use its *Viscounts* in first class service exclusively but may ultimately supplement this with 56-seat conformation for coach service.

President Carmichael's outlook on the operation of the aircraft is entirely enthusiastic. He comments: "It is just as though this airplane was designed for Capital, or our route system was designed for the airplane." END

Club Safety Award

(Continued from page 34)

freedom from accidents and traffic violations; ratings of various types won by club members during the year; student pilot certificates; and per cent of membership attendance at club meetings. Thus competition is designed to reflect organized and disciplined strength as well as individual achievement. The program lays stress on aviation education within each club and gives credit to the club which extends its efforts toward public information on aviation. Mass club flight and intra-club competition are stressed. Some of the clubs own aircraft in the name of the organization while, in other clubs, the plane ownership is solely by individual members. In all cases each club competing for the trophy must compile an annual report, using the prescribed formulae. The name of each consecutive trophy winner is inscribed on a plate at the base of the perpetual trophy and the club agrees to display the trophy prominently to the public during the time of its possession. Incidentally, the Club Safety Trophy was created by Julian Focan, the same craftsman who made the Collier Trophy. It is valued at more than $3,500.

Club competition has been so devised that all participating organizations have equal opportunity to win, regardless of size. END

Shadows of the Korean War

(Continued from page 17)

Arthur's brilliant counterstroke—the landing at Inchon of September 15, 1950. MacArthur used the last Division from Korea for this move—the U. S. 7th, and the 1st Marine Division. They recaptured Seoul; cut off the North Korean army hammering its way into the Naktung River perimeter. As the Koreans tried to escape the trap and drew northwards through Taejon and Suwon, the pilots destroyed them along with 1,000 Russian tanks. The debris cluttered the main road from 200 miles for a year afterwards. Only 25,000 of the original army of 200,000 escaped.

When Red China entered the war and drove the U. N. infantry back again below Seoul to Suwon, the Air Forces once again played a decisive role. They wrecked the Red supply so decisively that the enemy could not sustain his war at the end of an attenuated line.

The aggressors withdrew from January to April, 1951, and moved back north of the Imjin River; our infantry advanced to Seoul again to meet the main enemy resistance in combat from April to June, 1951.

Here the Chinese hoped to maintain supplies on a shorter line. They broke through British and R.O.K. lines on a ten mile front on April 21, 1951. But they could not exploit the break by rushing their tanks, guns and heavy equipment through the gap. The U. S. Air Force isolated the battlefield so effectively that supplies simply could not move on the roads and rails.

Thus by June, 1951, after the Chinese had hurled themselves in fury but in vain against the U. N. line, they sought an armistice. They knew they had been licked and could not hope to enter South Korea by force. They had been thwarted by air power—and their lack of it.

This brings us to the story of the Mig. It entered the scene in November, 1950, and the *Sabre* challenged it from Suwon airstrip by the New Year, 1951. In two and a half years of the fight for command of the air—upon which all else depended—the Russians lost 805 Migs against our loss of 58 *Sabres*. As a result, the Migs were never allowed within 100 miles of the battlefront. The enemy was on the receiving end of Air Power

(Continued on page 68)

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(Continued from page 66)

night and day for two and a half years. The U. N. forces never experienced an air raid; never had to dig in from that risk; never had to bother with camouflage; never lost a night's rest; never had to take cover. That was the sort of protection the infantry from 18 countries received from the U. S. Air Force. This is what happens when command of the air is secured. Of course, we lost hundreds of aircraft giving close tactical support to the Army on the fixed battle line from June 1951 to July 1953. (The Communists lost none—they couldn't even get near the battlefront.)

The Reds realized the importance of securing airfields in North Korea. If these could have been used instead of safe Manchurian fields, they figured they could extend the range of the Mig to the battlefront; escort day bombers; protect their supply routes; give tactical support to their armies and bomb our lines. They were prepared to throw away a million men if they could exploit fully a gap torn in our lines. U. S. airpower never gave them the chance.

There are at least 12 good airfields in North Korea between the Yalu River and Pyong Yong. The Communists constantly tried to bring these fields into use but the U. S. Air Force kept them under constant day and night attack. It was a grand achievement. Red failure in air power contrasted with our ability to use it, brought the Soviet decision to abandon the aggression. What the Communists sought, of course, in over two years of talks at Panmunjom from July 10, 1951, to July 27, 1953, was to find some means of *talking* us into leaving Korea. He has tried to win by political chicanery at Geneva what he failed to secure by military decision in Korea.

Now that he has measured the Mig against the *Sabre*, the Kremlin knows he does not possess a suitable Interceptor Fighter to command the air on any front. This is bound to be the principal deterrent against an outbreak of global hostilities. Now that he has measured himself against the U. S. Air Force, he knows that in training and in aircraft he is found wanting.

I should say the Russian is a very worried man today. But he has stalled the talks at Geneva in hope that, by the autumn campaign season in Indo China, he can secure decision there. END

Crosswind Gear?

(Continued from page 39)

There is another advantage of castered gears. The Air Force conducted an extensive test of the Goodyear gear on the AT-6 in the training phase at Scott Air Force Base. They found they could save about 4½ hours in training time before solo. A little over two hours of this saving was lost in later transition to the standard AT-6 wheels. The net saving was slightly over two hours. In this case, savings in training time alone would pay for the gear, to say nothing of savings in ground loop repairs which I understand run well over an average of $100 per plane per year.

I have said that I have flown practically all of the various types which have been demonstrated publicly. Although only Goodyear of the original types was placed on the market, the failure to place the others on the market was not due to their performance. They were all good. Performance-wise they differed primarily in the ease with which the wheels castered or, conversely, in the amount of caster restraint provided in the design. The advantage of free castering is that, in a crosswind landing, the airplane will keep on the runway without much attention on the part of the pilot. It will also assume more of a heading into the wind on a crosswind take-off. The disadvantage is lack of taxi control. If no caster restraint is provided, taxiing control can only be provided by using the propeller thrust or by swinging the airplane far enough to bring the wheels up against their castering stops. To give the advantages of both free castering and no castering, Goodyear has provided pilot controllable caster locks on their DC-3 gears.

The Geisse gear which came along later, in effect provides one non-castering and one castering wheel. Actually both wheels can caster out but not in—so only one wheel, the downwind wheel, casters at any one time. Where others have provided caster restraints on both wheels to provide taxi control, Geisse puts all of the restraint on one wheel at any one time. My first reaction to the gear was that the skidding of the one wheel would result in high tire wear but, some of them have now been in service for over a year without any apparent increased wear, probably because they take a higher side load than the other type, but take it only one-half as much of the time.

I must confess that at first I was dubious about putting it down in a crab but soon learned that it could take all I could give it. The reason, as I understand it, is that in a drift landing, the weight of the airplane tends to shift over to the downwind wheel. The upwind wheel is definitely limited in the amount of side load it can take. Geisse explains that with the average relationship between the height of the center of gravity and the spread of the wheels, the maximum sideload on the non-castered wheel will be the same as the total sideload on fixed wheels with a five degree drift at touchdown. The English tests referred to above disclosed that the average pilot would have no trouble in avoiding a ground loop with a fine degree drift at touchdown so it would seem that the gear provides about the maximum taxi control permissible without danger of ground loop.

The Geisse gear has been applied experimentally to the Bellanca *Cruisair*, the Piper *Clipper*, the twin Beech and the Navy SNJ. In all cases the performance was reported as satisfactory and the Navy report of SNJ tests was exceptionally favorable. Incidentally, it reported no increase in tire wear. The gear is now on the market for the Cessna 120, 140, 170 and 180 and will shortly be available for the 190. Initial tests of the latter by the CAA were made 90 degrees across a wind

varying from 45 to 50 mph.

These gears have other possibilities, too—good clean fun, for example. Early one Sunday morning I landed at an airport in the Washington area with a Doubting Thomas who wasn't convinced that the Bellanca gear would stand up under rough treatment. I picked the most uneven section of the airport to demonstrate—practically doing "S" turns on the ground while taking off and landing. After the fourth landing, the airport manager's station wagon with a county policeman in it was sitting on the runway end. They piled out and arrested me for flying while drunk! Took a lot of talking to get out of that one—and it was my best demonstration too!!!!

By this time, you've suspected that I'm sold on the castered gear—well, I am. The increased utility of any airplane so equipped makes it pay out. The increased ease of making crosswind landings appears to be reason enough to want it on your personal airplane. But its real value is more than the crosswind business. It's a good insurance policy in your pocket when you're tired or a little careless in not getting the airplane's path in exact alignment with the runway—the assurance that you won't be paying for a bashed-in gear, wing tip or prop as a result of one weak moment—is a nice feeling to have. In fact, if we never had wind to contend with, the castered gear would still have its place in this flying game.

END

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The Deep Roots of Embry-Riddle

(Continued from page 37)

his partner's interest in the Embry-Riddle Company. Today the school is located in the Aviation Building, which is Embry-Riddle property, located on N.W. 27th Avenue in Miami. It is operated under the leadership of Mrs. Isabel McKay, widow of Mr. McKay. First and only woman to serve as a director of the Aeronautical Training Society, she was assistant to the president (her husband) from 1945 until 1950 when she became president. Her sons, John, Jr., Hobert and Robert, all Embry-Riddle trained pilots, are directors and officers of the company.

Embry-Riddle students take their lessons seriously . . . 58 per cent of the late graduating class boasted grades over the 90 mark. The school's technical division offers courses for airframe and powerplant technicians along with courses combining preparation for A & E Mechanic and Private Pilot, and A & E Mechanic and Commercial Pilot. Aeronautical design and Technology is taught. All courses are approved by state authority and the Veterans Administration.

Its Flight School offers Private Pilot, Commercial Pilot and Instrument Flying Courses, all CAA approved. A two-year business pilot course is given in cooperation with the University of Miami. (Embry-Riddle was among the first schools to collaborate with a university in this program.) Completion of this course earns credits toward a Bachelor of Business Administration Degree from Miami University. There's also a four-year BBA Degree course with a major in aviation management.

So the old dream of a man with two planes, and the saxophone players and businessmen who joined him, and the national crisis which called upon them for defense power, and the 50,000 youths who went out to make up that power, all blend into a tradition and an institution The roots are deep. We who carry on can only hope the future vintage will continue to be worthy of the roots. For we too have our dreams. END

Stits Kits

(Continued from page 38)

Specifications on the single-place SA3A *Playboy* show a wing span of 22 ft. 2 in.; length 17 ft. 4 in.; net weight 525 pounds. Wing area is 96 sq. ft.; and wing loading is 8.6 lbs/sq. ft. at 827 lbs gross weight. It carries 14 gallons of fuel and 40 pounds of baggage. Engine may be an A-65 Continental through C-90 Continental. Other engines up to 200 hp could be installed. The Continental motor mount is standard on the *Playboy*.

Performance figures from tests of the prototype with an A-80 Continental at 1,000 feet above sea level give the plane a top speed of 135 mph, cruise of 125, and stall at 38 mph. It climbs at 1,250 feet per minute, takes off in 150 feet with a 10 mile wind. Service ceiling is 12,000 feet.

Recently somewhat modified and "dressed up", the *Playboy* prototype has been given an inverted fuel system and is fully aerobatic with a C-85 Continental

(Continued on page 72)

Briefings . . .

(Continued from page 63)

ley (Calif.) Airport. Norman Larson has constructed a $200,000 facility including sales-service building, restaurant and bar, rental car and hotel reservation service. Hangar space for transients and long-term lease individual T-units are available.

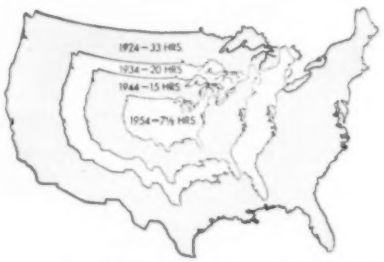
NATIONAL AVIATION TRADES Association will hold its annual convention at the Biltmore Terrace Hotel, Miami Beach, Fla., November 8 through 10.

SOMETHING NEW in light-weight radios may be on the way. The Army says it now appears feasible to build a two-way radio approximately the size of a package of cigarettes by using the new transistors throughout.

FAIRCHILD plans to make the St. Augustine, Fla., Municipal Airport a site for projected operations of its Aircraft Division.

HELIO AIRCRAFT Corporation of Boston, Mass., has given exclusive manufacturing rights and sales for Canada and the British Commonwealth of Nations on the Helio *Courier* to Fleet Manufacturing Ltd., of Fort Erie, Ontario.

THIRTY-YEAR SHRINKAGE of transcontinental distance in terms of travel times is shown by this United Air Lines



map. In 1924, mail planes crossed the country in 33 hours. In 1934, Boeing 247's cut time to 20 hours. DC-3's a decade later lopped off five hours. And DC-7's now span the nation in 7½ hours.

EIGHTEEN BEDROOM UNITS are contained in a patented facility called "Airwayte." The designer proposes to construct units at air terminals for passen-

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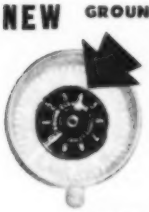

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SEE PAGE 67

We have 3 really superlative executive BONANZAS, 35, B and C; plus 3 excellent TRI-PACERS; very attractively priced, for further information contact . . .
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Business Asked for It

(Continued from page 25)

of the plane by four and one-half feet, and still maintain the same effective aspect ratio. This is possible aerodynamically since the tanks serve as tip discs and substantially reduce tip losses.

The engine nacelles are the most streamlined ever. As in all the detail design, a great amount of engineering time was spent to achieve this. A wide variety of engine arrangements were studied and we believe the results are excellent.

For power, we have chosen two compact packages that give high thrust and minimum drag, yet allow plenty of room for engine accessories. Each engine develops 240 hp at 2,600 rpm. Each engine is equipped with a controllable, constant speed, all metal, full feathering propeller. The 310, fully loaded, will climb 380 feet a minute on one engine.

The main landing gear retracts inward into the wing, which is made possible by the absence of tankage in this area, and avoids the necessity of expanding the nacelles to accommodate the gear. This resulted in considerable reduction of the nacelle area. The nose gear retracts aft into the nose section and is sealed off from the cabin by an air-tight bulkhead.

Interior appointments are in keeping with the expectations of our most exacting customers. Fittings, upholstery . . . everything is the finest. A total of five people ride in complete comfort on foam rubber seats, and each can take as much luggage as the airlines allow.

Not only has the basic configuration been given great study, but also a tremendous amount of engineering has been spent on detail design, aerodynamically and structurally. Minute attention has been given to skin lamps, flush riveting, window and windshield installation and fairing, as must be done on an airplane with a top speed of 220 mph. We feel that by spending six years and well over three million dollars in development and special tooling work—by utilizing every bit of experience and ingenuity and advanced scientific knowledge we could muster—by overlooking no opportunity for improvement—we have produced the kind of twin-engine airplane many businessmen have indicated they want—that owning and flying a Cessna 310 will be like having your own airline, operating at your convenience. The price is $49,950, less than has been spent in converting the interiors of many twin-engine, military surplus airplanes.

The 310 is the latest but far from the last new and improved Cessna which will be built to fit the needs of American business. Rapid scientific advances are being made in our industry. As quickly as they can be made practical for business airplanes, they will be brought to businessmen in new Cessnas. We have a number of interesting, long-term research and development programs presently under way and contemplate many others. The Cessna Aircraft Company believes in the future of business flying. It is our basic business. We are willing to invest time, money, and perspiration far in advance of any direct return, to increase the value of the airplane as a business tool. END

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(Continued from page 70)

"injector" engine installed. This gives it a top speed of 150 mph, cruise of 135 and stall of 50 mph. This version has a wing span of 20 ft. 6 in., and dry weight of 595 pounds. The canopy is not a blown bubble as it appears in the accompanying photograph, but is made of two flat sheets that have been cut to a contour. Cost for the canopy was $8 compared to $100.

A two-place model with folding wing, the SA4A, will be available in both kit and blueprint form. Designed for 100 through 150 hp Lycoming engines, the new model's estimated specifications give it a wing span of 25 ft., length of 18 ft., and net weight of 675 pounds. Wing area is 110 sq. ft., gross weight 1,135 pounds, and wing loading 13.2 lbs./s. ft. It carries 18 gallons of fuel.

Performance of the SA4A with a 150 hp Lycoming installed shows a top speed of 205 mph, cruise 185, and stall of 50 mph. It takes off in 150 feet and climbs at 1,500 feet per minute.

The first of the SA4A's is being built for Mr. William J. Besler of the Besler Corporation, Emeryville, Calif., as a test bed for two new engines his company is developing. The first is a 150 hp steam engine with a total weight of approximately 200 pounds. The Besler Corporation is one of the oldest and most experienced companies in the field of steam power.

It is now possible to disclose that steam is being considered by a branch of the government as a possible power source for aircraft, in light of recent developments in atomic energy and new shielding material. Tests on the SA4A with the Besler steam engine installation will be conducted toward that end.

The second engine of the Besler Corporation to be tested in the folding wing two-place *Playboy* is a 2-cycle, 4-cylinder geared V engine of a new design, developing 100 hp and weighing approximately the same.

After all tests on the steam and 2-cycle engines are complete, a conventional Lycoming engine will be installed for further demonstration. The SA4A should be ready for flight tests by late sumer.

Anyone desiring additional information on the Stits kits or construction plans should write to: Raymond Stits, Stits Aircraft, West Riverside Airport, P. O. Box 3084, Riverside, Calif. END

The Big Edge

(Continued from page 27)

left undestroyed, the tactical range, covering 13 square miles, is worked over regularly with bombs, rockets, napalm and gun fire by the fighter-bomber students. Here the feigned enemy is dug in along a mountain crest. Bunkers are just as the Communist constructed them in Korea. Batteries of field artillery plus a tank park are tactically disposed in the area. A battery of anti-aircraft protects a large bridge across a dry wash. A dummy railroad disappears in a tunnel. Stretched out in the distance is a convoy composed of 50 salvage vehicles. Additional targets are road blocks of heavy timbers. Simulated weapons are made of wood and pipe to actual scale.

Virtually all instructor pilots at Luke are Korean combat veterans, each with 100 or more fighter-bomber missions in his flight jacket. Original Luke graduates returned to the base as instructors in the spring of 1952, among them Lt. James Kasler, who, applying what he had learned over the Arizona desert, was the first Luke graduate to become an ace in Korea, with six Communist aircraft to his credit.

As more Korean returnees entered the instructor program, the combat experience level in the training groups rose steadily. A close check also has been maintained on Luke trainees. After he completed ten missions, a long, detailed report was sent back from Korea on each graduate, listing his weaknesses and his strength. If a weakness was found to be common, a revision in training procedures was indicated.

It is Arizona's near perfect weather that makes possible the 80 hours of flying, totaling 65 to 70 missions, that a pilot gets during ten weeks of training.

"It would take Tactical Command 12 to 18 months to give the men what they get here in 10 weeks," said Brig. Gen. Charles F. Born, late Luke commander.

END

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Index of Advertisers, September 1954

Air Associates, Inc. ..... Fourth Cover
Aircraft Owners and Pilots Asso. 61
Aircraft Radio Corporation 48
Aircraft Service Co. 62
American Airlines, Inc. 13
American Flyers 68
Batori Computer Company, Inc. 63
Bushnell's 62
Cal-Aero Technical Institute 57
Camair, Inc. ..... Third Cover
Collins Radio Company 2
Continental Motors Corp. 55
Convair 53
Criterion Co. 71
Dare, Inc. 64
Embry-Riddle School of Aviation 47
Flying Magazine Book Service 59
Gaare Supply Co. 72
Goodyear Aviation Products 3
Gonset Company 54
Gulf Oil Corporation 9
Hobbs, John W., Corporation 64
Indiana Technical College 62
Jardur Import Co. 68
Jarico & Associates 71
Jurgens, C. H. S. 71
Kane Aero Equipment Company 72
Lear, Inc. 8
Line Material Company 50
Lockheed Aircraft Corporation 45
Merlite Industries, Inc. 72
Met-Co-Aire 69
Meyers Aircraft Co. 66
Mohawk Valley Aviation, Inc. 69
Morristown Airport Service Corp. 58
Munk Aero. Lab., Inc. 71
Narco 10
National Aircraft Show 58
Navco, Inc. 72
New England Helicopter Service, Inc. 58
Northrop Aeronautical Institute 71
Pacific Airmotive Corp. ..... Second Cover
Pan American Navigation Service 70
Parks College of St. Louis University 60
Photography Annual 65
Piper Aircraft Corporation 11
Popular Electronics 67
O. T. Sales Company 68
Remmert-Werner, Inc. 72
Spartan School of Aeronautics 54
Standard Oil Company of California 51
Stewart Warner Corporation 5
Survivo 70
Trans World Airlines 49
True-Course Company 71
Weems System of Navigation 70
Jim Welsch Aircraft Sales 72
White Plains Watch Co., Inc. 66
Whiteman Manufacturing Co. 72
Wing Wax 52
Woid, William C., Associates 72

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The following list shows the sources from which photographs in this issue were gathered. Where a single page is indebted to several sources, credit is recorded left to right, top to bottom:

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